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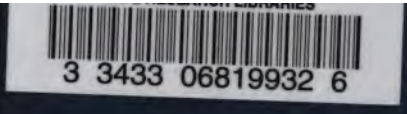
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WAR, SCIENCE AND CIVILIZATION

BY

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PREFATORY NOTE

The reader is asked to take this little essay more as a biological than as an ethical-political study of man. He is further asked to notice that the study proceeds from the natural history side of biology rather than from the chemical-anatomical side. The starting point is that of the field, or observing biologist rather than that of the laboratory, or experimenting biologist. It is that of Linnaeus, the biologist who looked upon man as alive and acting, and as one among innumerable other animals, and named him *Homo sapiens,* the wise species, just as he looked upon the cat and named her *Felis domestica,* the household species.

The "struggle for existence" (or is it struggle to terminate the existence of the other side? — The distinction is fundamental.) in which the wise species inhabiting the Old World is now engaged, is a spectacle irresistibly fascinating to me, not only from its momentousness to human welfare, but from the great scientific problems it involves.

If the reader will keep in mind the kind of workman and the motives that have produced the essay, he will perhaps judge the effort more from the fundamental principles set forth, than from its shortcomings in matters of political and historical detail — shortcomings which the writer knows are serious.

W. E. R.

La Jolla, California.

ГІВІЧУКА
ЬЛВІТС
ИЕЛЛ ЛОЇК

INTRODUCTION

Civilization and not war is the main theme of this essay. The European cataclysm was, it is true, the stimulus to the expression of the present views, but it has only an incidental place in the discussion. Two things have specially influenced me to consider certain aspects of the subject now uppermost in the world's attention.

First, the leading nations on both sides in this struggle assert with the greatest positiveness and undoubtedly with a large measure of sincerity that they are fighting for civilization as well as for their own interests. Second, science and scientific ideas are playing important parts in the tragedy now being acted on the world stage. The physicist, the chemist, and the engineer are not only "behind the gun," they are also behind the departments of state and war. Furthermore, eminent publicists make much of the "biological argument" both in defense of war and in denunciation of it. It does not seem unnatural, then, that a man of science, particularly a biologist — one whose business it is to observe living things, man with the rest, in the fullest, most impersonal manner possible — should think

he might contribute something significant to the great open discussion.

The task I have set myself will not require me to say much about the character of war as such. I shall consider neither its general causes nor its general effects; nor shall I take sides one way or the other as to whether universal peace would be a good thing. I must state, however, that I do not believe peace at any cost is better than war, or that war is always and wholly bad. Despite the great preponderance of lofty sentiment and wisdom in the pacifism of later years, I cannot shut my eyes to elements in it of pusillanimity and menace to noble character, individual and national. There are those, neither few in number nor weak in influence, who advocate peace more in the interest of money-making than in that of man's highest good; and some of these there are whose hunger for gain is so debasing that they would preach war with as much zeal as they now preach peace, were they convinced that war more than peace would help them to their goal. I am persuaded that all the wars combined in which the United States has engaged have not hurt our national ideals, no, not even our national life, so much as has commercialism. But that is another theme.

I undertake to show that wars are inevitable so long as theory and practice among nations

continue to be what they are with respect to the acquisition and possession of territory; and that wars are no solution to the problem because the theory which is instrumental in precipitating most of them is scientifically wrong.

My fundamental thesis may be stated as follows: Means of subsistence being as essential to nations as to individuals, when a nation finds its growing population pressing hard on its territorial limits while other nations own more territory than they need, it is scientifically justifiable for that nation to wage war for gaining more territory if no other means of relieving its needs can be found. But as war is both a costly and an uncertain way of gaining the end, some other way should be sought. Since discovery, exploration, and settlement, formerly available, are now excluded — the whole landed area of the earth being claimed by civilized peoples — the only way open is negotiation. It appears, therefore, that a great forward step in world civilization would be taken were governments to find some rational,— that is, peaceful,— method whereby national sovereignty over portions of territory might, under certain circumstances, be transferred to other governments.

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WAR, SCIENCE AND CIVILIZATION

CHAPTER I

GENERAL OUTLOOK UPON CIVILIZATION FROM THE STANDPOINT OF BIOLOGICAL SCIENCE

I. AN ELEMENT OF INDUBITABLE JUSTICE IN GERMANY'S CASE

Justice as well as neutrality is the watchword of the United States in its relation with the warring powers of Europe. This being so, it is incumbent upon the people of our country to give more heed to one of Germany's claims than so far we have given. We must grant that she deserves "more room in the sunshine" than she has, while we unreservedly condemn the animalistic theory of human life upon which modern militarism largely rests. At the same time we gladly recognize that the good Germany has done mankind generally by cultivating the sciences and arts of peace, outweighs the harm she has done by promoting war. Because of the good she has done and in the future may do, we believe her entitled to a larger share of nature's bounties than has fallen to her lot by the hit-or-miss methods of distributing those bounties that

have hitherto prevailed, even among civilized peoples.

II. WHAT SCIENCE IS PURPORTED TO TEACH AND WHAT IT DOES TEACH

Though the reasoning of brutalistic militarists of whatever country cannot be accepted in its entirety, neither can it be rejected in its entirety. "The idea," says a recent German writer, "of settling by arbitration the question as to whether a hungry man may take a loaf of which he has the full physical strength to possess himself is chimerical and quixotic." There is no escape from the truth summed up in this figure. But it does not cover the whole case. Such situations constitute what militarists of the von Bernhardi and Homer Lea type regard as the biological necessity for war. As a biologist, I would insist that the argument which would make war everlastingly necessary on such grounds implies a limitation to the conception of "biological" that is utterly inadmissible by biology itself. Biology never stops and never can stop in its dealings with any animal by regarding it as just an animal in an unrestrained sense. It always deals with some particular *kind* or *species* of animal. The fish must be treated as a fish, and the bird as a bird. Neither can be disposed of by merely attending to such general attributes as need for food and

propagation, common to both, and to all animals.

In exactly the same way is it impossible for biology to consider man as just an animal. If it touches him at all it must touch him as the *human* animal. Confusion of thought in this matter, not only among laymen but among many biologists, is amazing, and has led to the most bizarre speculations about man, some of these being truly direful in their effects on human outlook and conduct.

In the light of this simple zoological principle, such creations as Friedrich Nietzsche's " Blonde Beast " is seen to have just as much and just as little claim to serious attention as have satyrs and centaurs. Because man retains some of the attributes of his animal ancestors which may come to the front in their ancient, or even in augmented force, under exceptional conditions, as in feeble-mindedness and insanity, it does not follow that all men should be looked upon as insane or feeble-minded.

So biology, having been drawn into this discussion by showing that it would sanction war in such special cases as that symbolized by the hungry man and the loaf of bread, is bound to repel the attempt to make it justify war generally, especially since that involves the attempt to hamper biology in the use of one of her best established, most cherished procedures — that of

treating each animal on the basis of its most distinctive attributes. While biology freely admits that the hungry man, like any other hungry animal, is bound to steal food or fight for it if necessary, it is at the same time compelled by the facts to recognize that as a *human* animal, endowed with reason, and foresight, and inventive talent, and humane sentiments, man dehumanizes himself if he does not use these endowments to forestall situations that would make hunger press thus severely upon him.

There is a famous saying that man does not live by bread alone. This is better biology by a thousand times than those inculcations which would have his life depend chiefly on his general animal attributes and ignore for the most part those attributes that make him a special kind of animal, namely a rational, an esthetic, a moral, and a religious animal. Nobody, and especially no biologist, can notice too particularly that the man who does *not* live by bread alone, is exactly the man we call civilized. While in the savage state he does live by food chiefly, his outgrowing this is just what carries him into the civilized state. But despite all philosophizing to the contrary, he who has actually experienced the deprivations of extreme poverty knows to a certainty that high spiritual well-being is inseparably linked with high physical well-being; that the best things of civiliza-

tion are impossible apart from bodily health and a due measure of material wealth. So it comes about that individuals and peoples most able to contribute to civilization, and most capable of enjoying its fruits, and so most in need of such enjoyments, cannot and will not stand by in passive want while riches, largely contributed by their own intelligence and industry, are enjoyed by others who possess the earth beyond their ability of wise utilization.

By restating man's need for bread in this broader way we get at the heart of the whole matter, namely, the question of how man's foresight may be so employed as to avert the crises which hunger inevitably brings. And incidentally we raise the present issue above that of whether Germany with her present geographical boundaries had reached, or indeed ever would reach, the position of the starving man. A balancing of the accounts of civilization on the basis of services rendered and compensations received, would give her more than she now has of the earth's primal resources. And it cannot be too clearly seen that all of Western civilization has a vital interest in justice to the Teutons touching this matter. Assuming their fecundity, and their industrial, their intellectual, and their artistic activity to continue unabated — and there is no reason for assuming otherwise — it is inevitable that ere long economic pres-

sure upon them relatively to what it would be on several of the other peoples foremost in civilization, would be so severe as to cause them deprivation and affect disadvantageously their achievements for the higher reaches of civilization. Indeed, it would be easy to point to certain untoward features of present-day German science that seem due, partly at least, to over-intense competition for a livelihood.

But these considerations of economic justice as between peoples and nations do not apply to Germany alone. Indeed, hardly any question is more fundamentally international. Manifestly other nations are almost if not quite as inadequately rewarded for what they have done, as insufficiently provisioned for future work, as the Germans. This is notably true as touching the Dutch, the Belgians, the Danes, and the Japanese.

III. CIVILIZATION AS A BIOLOGIST SEES IT

Sociology and politics that have gone to biology for as much of their foundations as are in the nature of things requisite, will surely recognize that civilization is a broader and deeper category than race, peoples, nation, or state; and one of the most urgent needs of the hour is to so define this category as to make it more practically operative in social science and

politics, national and international. One result of such clarification would be to compel attention to the integrating function of civilization as among peoples and nations. And a foremost result of this, again, would surely be to bring home the necessity of better distribution of the primal sources of wealth and the fruits of toil than has hitherto prevailed in civilization. "Better distribution," be it noted, is what the situation demands rather than juster distribution, since the question is not merely, indeed not chiefly, that of securing to individuals and nations what is due them for the services they have performed; but rather that of putting into their hands means by which they may continue to render in the highest degree the peculiar services for which they are fitted. Justice in evolutionary ethics looks forward as well as backward. It aims to reward not merely on the basis of the good already done but on estimates of ability for doing future good.

This brings us to the kernel of this discussion, and, as it seems to the writer, to the supreme question our nation will have to grapple with if it would accomplish anything significant toward world peace. That question is, can we present any practical plan whereby nations foremost in the march of civilization shall be assured such portions of the primal resources of nature as are

necessary to enable them to maintain the places they have won, without having to resort to war to secure them?

IV. NATIONS ESSENTIAL TO CIVILIZATION

Before undertaking to answer the question another point must be touched upon. Many persons believe ease of migration from one country to another, with unhampered privileges of naturalization, and for pursuit of vocation, to be capable of solving the problem of national congestion. But due consideration being given the facts of "nature and nations," borrowing a phrase favorite with Thomas Jefferson, we are not warranted in expecting to find the solution in this direction. Those countries standing highest in civilization are exactly the ones in which citizenship and residence are most desirable, and hence those calculated to attract immigration. The correctness of this supposition is indicated by Germany's experience. Considerably more than half her large annual increase in population is due, as pointed out by Edmund von Mach, to immigration. Nor will those who have read this author's illuminating book fail to recall the explanation he gives. Largely because of her welfare legislation "Germany has become," he writes, "a good country in which to live, and in which to look contentedly into the future and to one's old age, even if one is a

poor man." It does not seem reasonable to suppose that citizens of countries that stand at the highest levels of civilization will be likely to renounce such citizenship in large numbers to acquire citizenship in countries of inferior civilization.

The highest civilization might be defined as that state of human society which secures the greatest good to the greatest number, so that theoretically those who live in such a society will not be inclined to abandon it. A really high civilization seems to be impossible without great solicitude and activity on the part of the national government for the "general welfare," as our Federal Constitution puts it. Especially are those attributes of a high civilization which manifest themselves in securing as great a measure as feasible of safety, comfort, intelligence, efficiency, and happiness to the great rank and file, impossible without much of what is known as welfare legislation. While many such measures may be best left to subordinate political divisions, the main impetus to such enactments, and many of the measures themselves, must probably always come from the central government. Recent tendencies in all the foremost countries toward what is called state socialism confirms this view. Now, when to the binding power of governmental policies are added the ties of language, race, and social cus-

toms, it seems inevitable that national life should gain in importance rather than diminish, as some persons of noble catholicity of feeling touching a few aspects of human life believe. Those who minimize devotion to the flag fail to see its full meaning for the great masses of average people. The believers in a world patriotism that would supplant national patriotism are viewing the problems of human life from the standpoint of the essentially unifying interests of men, and overlooking the equally essential diversifying interests. A few who live on Easy Street so far as worldly goods are concerned, whose vital interests lie in those fields of learning, or art, or business, which have a large element of the universal about them, and who are not over-sensitive for the welfare of the great masses of their fellow beings less fortunately circumstanced than they, may outgrow the sentiments of national patriotism. But just in the proportion that the civilization of a country becomes truly higher must this class become smaller. The cosmopolitanism that we must suppose will gradually arise with the general advance of civilization will be international rather than supernational; will be attended by the co-ordination, the integration, rather than by extinguishment, or even suppression, of national life and ideals.

V. THE REAL PROBLEM

So there comes before us in clear light one of the chief problems, probably, in this stage of world progress, the chief problem to be solved before real headway can be made toward freeing civilization from warfare. Can a way be found whereby the nations of the world, some of which truly need a larger share of nature's wealth than they possess, while others possess more than they really need, may adjust their relative needs without resort to war? Or, stating the matter still more pointedly, is an international arrangement possible whereby a nation might under certain circumstances give over to other nations portions of its territory or other economic advantages peacefully, deliberately, and without immediate and definite compensation? The suggestion even in the form of a question will probably seem too absurd to merit a moment's thought by practical men. My own categorical answer to the question is, no, as long as politics, national and international, rest on a philosophy of nature and human nature so defective as that upon which they now do rest; but yes, if political practice could be based on a philosophy that should conform to the actual facts of nature and human nature. An argument for such a philosophy as that upon which my affirmative answer depends is the real task of this essay.

VI. PARTNERSHIP BETWEEN POLITICS AND SCIENCE IN GOVERNING THE WORLD

Proceeding with the task, I ask, have not the peoples most forward in civilization now reached a point where they are able to think *part of the time* on international relationships in terms other than the traditional ones of the chancellery and the war office?

Surely no one needs to be laboriously shown that extensive, careful observation on the facts of nature and reasoning about them,— that is, science,— has cut a large figure in making the world as the abode of man what it is today. Nothing is more obvious than that science has contributed incalculably to the shaping of things as they now are, to the development of civilized man. But reflection enables us to see that practical politics, whether domestic or foreign, cannot be in a high degree scientific; especially that diplomacy cannot. The meeting of exigencies, the out-of-hand adjustment of interests, conflicting here and now, appear to be the main business of diplomacy.

Much the same seems true of most efforts in the domain of politics. The methods of science are not adapted to dealing with such matters of expediency, they being quite alien to the spirit of science. Without great deliberation and endless going back to fundamental principles there is no science. That experimentation,

perhaps the most characteristic and indispensable instrument of science, necessarily means a certain number of discards and failures, is a fact far too little understood by people generally. Much as the tree of science has produced and is producing for the good of mankind, it could produce still more richly were not the popular demand so insistent that it bring forth fruit in some other way than by the laborious, time-consuming, expensive one of sap-elaboration through root, branch, leaf, and blossom. These remarks about science lead to the question, if then, politics must be something other than scientific, does it follow that science can contribute nothing to this great domain of man's concern? By no means. While politics can never be a science in a strict sense, it cannot measure up to the real needs of modern civilization unless it rests on a foundation a large part of which is science. The distinction is fundamental. Nicolo Machiavelli is said to have been the first to attempt to formulate inductively a science of politics. From his time until this moment efforts to realize his ideal in this respect have continued, but have come far short of complete success. The old Florentine and his followers have succeeded in so far as they have been able to view politics as genuinely politics and not mere aspects of something else. They have succeeded also to the extent that they

have acquired the ability to deal with vital problems of government as though to them they had none other than a professional interest, that is, with self-interest and ulterior motive entirely eliminated. But after all this is said, there is yet to be recognized a wide margin in practical politics which by the nature of things must be essentially unscientific. And there is also to be recognized in the substructure of the political edifice that which is not politics, but science.

Let us see now if the suggestion that a nation might under certain conditions peacefully give up some of its territory, would look absurd to a theory of politics that should be scientific to the extent and in the sense above indicated. First of all, attention must be called to a few elements entering into the question that are always recognized as resting on principles of nature far removed from the political realm. For example, the "instinct of propagation," and the "law of diminishing returns" of industry, are manifestly of this character. The first is primarily biological, the second is primarily agricultural and industrial. Again, "the struggle for existence" and "natural selection" now being invoked by militarists in justification of war, and by anti-militarists in condemnation of it, are, as everyone knows, biological conceptions, pure and simple.

So while politics can never be wholly scien-

tific, it is indubitable that modern politics have and must have a great substructure of science. No modern state or city thinks of conducting its affairs in entire disregard of the sciences of chemistry, and mechanics, and medicine, and hygiene, and agriculture, and evolution, and now of eugenics. Would it not thus be a good thing if everybody, governing and governed, would examine still more critically and broadly the foundations on which modern political systems rest, to the end of seeing if there is not serious defect somewhere in the foundation doctrines concerning the holding and distribution of natural wealth?

VII. THE PROBLEM OF DISTRIBUTING WEALTH POTENTIAL AND ACTUAL

Early in the discussion reference was made to a hypothetical hungry man and a loaf of bread. It was admitted that it would be absurd and quixotic to attempt to arbitrate with the man taking the loaf under the conditions specified. But it was also intimated that from the biological standpoint it would be wholly inconsistent, not to say absurd, for civilized men not to foresee such situations and take measures for preventing them. We have now to consider those general principles of nature and human nature upon which man, the human animal, would base his efforts to ward off in the most effective fashion crises of national want.

It ought to be seen that the problem of distribution of territory among the nations is really but an aspect of the more general problem so vehemently discussed today of a better, more equitable distribution of the earth's wealth, actual and potential, than has hitherto prevailed. In its full scope the problem is intranational as well as international. It is the main problem of " war between capital and labor " as well as of war between nations.

Science has a way of going to great pains to state its problems before it undertakes to solve them. Stated in its most general terms the problem is that of allotting the earth among the peoples of the earth in proportion to their ability to use it well. It is the problem of placing the wealth of nature where it is most needed and where it will do the most good. The particular aspect of the problem before us is that of making this allotment among the political entities; that is, the states of the earth. And we are especially concerned with the part which war plays and can play in effecting that allotment.

From the scientific, yes, from the common sense standpoint, one of the urgent reasons for wanting to accomplish this end by peaceful means is the desirability of avoiding the destructiveness of wealth that war entails. On the face of the matter nothing seems more anomalous, more unfortunate, than that a system of dis-

tributing the necessities of men's existence among the political divisions of the earth, should be in vogue whereby in order that men may get that which they must have, they are obliged to destroy a large portion of that for which they are striving. Nor is the anomaly of the system found to be less by closer inspection. One cannot justly compare the consumption by war with those forms of consumption in industrial operations where some of the force employed is used up in the operation itself, and does not contribute directly to the end aimed at. To illustrate, there is no such definite and necessary relation between the property and lives consumed in war and the economic advantages which may flow from it as there is between the utilizable and the non-utilizable energy of the fuel consumed by a steam engine. In the case of the coal and the engine, given knowledge of the initial conditions, there is no element of uncertainty and haphazardness. The operator knows exactly what to count on. How different with the nation which goes to war with gain as its aim!

Again, those who defend war as a means of gaining territory or other economic advantage, and refer to the biological struggle for existence as a justification, seem to forget that the struggle as it goes on in sub-human nature does not consist in depriving all the contestants by whole-

sale destruction of the very thing struggled for. Two lions fighting over the carcass of a deer would not unite their efforts to sink it to the bottom of the sea. One or the other would be sure of a good meal. The sub-human struggle for the means of sustenance results in the destruction or defeat of some of the combatants merely; while that among human beings, especially those living under civilization, results in destroying not only some of the combatants, but much of the goods over which they fight. From this standpoint, so-called civilized warfare is far less scientific than the pillaging warfare among savages, which aims chiefly at capturing and carrying off the goods for which it is waged.

VIII. SCIENCE EMPLOYED FOR AND AGAINST WAR

An exceedingly important consideration looms up in favor of the contention that a scientific substructure of politics should be prepared *before the situations arise* with which unaided politics cannot cope. The scientific foundations for war are laid before the wars are waged, with the greatest care; and it is because of this that war has become so destructive, and hence so defeating of the ends which the means are supposed to accomplish. That desperate situations will arise is foreseen, and all the resources of science that can contribute to the effective-

ness of war are called into play for meeting these situations when they shall arise; while only part of the resources of science making for peace are called upon for the peaceful adjustment of such situations. In times of peace science is made full use of to prepare for war, but is not made full use of to remove the cause of war. In the present war, submarines, air crafts, wireless telegraphy, and high power guns are upsetting precedent in all sorts of ways, and making the struggle the most gigantic and destructive the world has ever seen. Later we shall say considerable about unforeseeable discoveries science is likely to make in the future for supplying man's physical wants. At this point attention must be called to the likelihood of such discoveries for waging war. There is not the least reason to suppose man's power of discovery and invention, and nature's resources for these powers to work upon have been exhausted in producing instruments of war. What may yet be done in the way of more efficient explosives, and better means of navigating the air and the depths of the sea, and in numerous other ways, no one can tell. In the last two mentioned matters particularly, only a beginning seems to have been made. From the standpoint of science, the warrantable prediction is that so long as the nations are producing many highly trained scientific men, and are pro-

viding them with facilities for research, and enabling them to devote their lives to it, and are calling for new military appliances, these will be forthcoming. *The only limit that can be seen to making the instrumental devices for war more destructive is the costliness in time and money of investigation and of the manufacture and employment of the devices that may be produced.*

Viewing the history of the leading nations during the last half century in the light of the course and nature of scientific discovery, the supposition seems justified that civilization is well on the road to self-destruction through its power of creating and using mechanical appliances for thus disposing of itself.

What has science to offer which could be put into the substructure of politics to enable the latter to so redistribute the natural wealth of the earth from time to time as to obviate the necessity for resorting to war? This is the supreme question.

Two great masses of achievement by science are available for such service. Both would do their work mainly through their effect on the large conceptions, faiths, and attitudes of men. The first would enable men to see that while the resources of nature necessary for man's existence are undoubtedly limited in one sense, in another sense they are not. They are not lim-

ited if only the *whole earth* and the whole of nature that *might be used* were actually so used. The problem of making them usable, and then using them so that their fullest utility shall be realized, is one of the very problems of continued advance in civilization. *Nature's resources are actually limited for partly civilized man, but potentially unlimited for fully civilized man.*

IX. MALTHUSIANISM NARROWLY VIEWED AND BROADLY VIEWED

Authorities on political economy differ fundamentally as to the validity of the Malthusian doctrine about the pressure of population on the means of support. We ought therefore to recognize that the "inner tragedy" of the population problem of which some economists speak, is largely a matter of the theoretical views one holds. There are so many tragedies of all sorts in human life that the whole of life looks like a tragedy to a dull and narrow philosophy. The undeveloped and unused or misused resources of nature are vast beyond calculation. If one considers only the agricultural lands of the earth, usually treated in speculative discussions on these matters as the controlling factor, he cannot but see how indefinitely far away is the time when the full productive capability of the soil shall have been utilized.

Some recent writers whose philosophy of life

requires them to ignore as far as possible what is human in human beings, speak of the "saturation" of the earth by people. For the sake of argument let us grant that certain areas of Europe, Asia, and North America are "saturated"; that is, are already supporting as many human beings as possible in comfort and happiness. The enormous unsaturated areas in Africa, Northern Asia, both Americas, Australia, and the great Archipelagoes of the Pacific and Atlantic Oceans must be kept in mind. That considerable tracts of these are "taken up" and are no longer actually virgin soil, but are being used to a slight extent by civilized man, cannot be allowed for a moment to constitute a saturation of them if any meaning acceptable to scientific agriculture be attached to the word "saturate." One of the most infallible tests of a people's grade of civilization is exactly that of the extent to which they develop the natural wealth of the land they occupy, and the use they make of that wealth. Nor can the seas be ignored. Important as are the fishing industries of a few regions, to the eyes of science the exploitation of the earth's waters for their organic products as a source of human food has hardly begun.

Giving due consideration to these facts and to the now well-established fact that scientific agriculture is able to increase soil productively be-

yond what could be seen a few decades ago, political economy of our day has definitely rejected the hard and fast Malthusian formula about the arithmetical increase of means of support and the geometrical increase of population. Even so, it would be folly to ignore a sort of inevitable pressure of population upon sustenance with the advance in civilization. "Again and again," writes an obviously conservative and careful economist, "we are driven back to diminishing returns as a fundamental limiting factor, not only of wages, but of interest and profits." It cannot be too strongly insisted that "limiting factor" as here used need not be fatalistically interpreted; indeed, cannot be so interpreted, if taken in a rigorously scientific sense. Given nature as science now knows it, and assuming the unimpeded continuance of scientific discovery, particularly in synthetic chemistry and several branches of biology, one can readily see that it is not warrantable to base dire predictions for the future of the human race on the assumption of limitation to discovery. This follows from the utter unpredictability of what particular discoveries science may make. The Greeks, for example, had absolutely no foothold to start from for the prediction of discoveries in gravitation, electricity, and the circulation of the blood. And a century ago who could foresee the discovery of electrons, and of radia-

tion, and of the Mendelian mode of inheritance? The truth is, really epochal discoveries in science are epochal largely because of their complete breaking away from previous knowledge and ideas; because, in other words, of their unforeseenness. This is a fascinating subject, but cannot be followed here. The point to be firmly established is that the history of science makes it wholly unjustifiable to base any argument on the assumption that man's knowledge of nature and control over her will remain even approximately what they now are. Indeed, so large a segment of this history is now open to inspection that we are justified in making the forecast that if science goes ahead with the momentum it has now acquired, revolutionary discoveries will continue to be made, some of which — and here is the vital point for the present discussion — will revolutionize this very matter of food supply. Indeed there is already ground more substantial than poetic fancy for predicting a time when food will be fabricated, perhaps by physiologico-chemical processes through the action of minimal quantities of living material on the inorganic constituents of food. This suggestion does not touch in the least the problem so feverishly speculated on — the "artificial creation of life." It should always be borne in mind that we do not eat organic beings, whole and alive. It is rather with certain products of

such beings that we nourish and clothe ourselves. And such products science has already gone far on the way toward manufacturing.

While it is impossible to assert that science will make such discoveries, we cannot reasonably predict tragedies on the assumption that she will not make them. Taking nature as it is, and progressive scientific discovery as it is, we have ample ground for believing that the physical necessities for the continued progress of man under civilization will be forthcoming. The question is largely one of faith in the eternity and infinity of the system of nature, and in man's sense of duty and powers of mind and skill of hand. From this standpoint, the words "give us this day our daily bread," repeated by so many millions of the human species through so many generations, gain in meaning an hundred fold.

The conclusion is, then, that so far as nature and science are concerned, there is ample reason to believe that civilization might insure its own progress indefinitely, even though "pressure of population upon the means of subsistence" be accepted as an inevitable concomitant of that progress. But as we have seen, an essential condition of continued progress would be the utilization of all the resources of nature to the fullest extent. In the way of doing this stands the stupendous obstacle of existing political

ideas and practices relative to the ownership of the primal resources. It seems unescapable that if science is to be enabled to do its best for civilization, some way will have to be found to overcome this difficulty. Nothing could be further from scientific than the way Africa and the Pacific Islands are being allotted among the civilized nations. Perhaps there is little hope of early reaching a rational basis in this matter. Surely there would be none were it not for the fact that civilized men are ruled so largely by general theories held in the blindest way; but that these theories may undergo profound change when personal interests are seen to be at stake; and that, on the whole, right theories appeal more to normal men than wrong ones.

X. AMBITION FOR EMPIRE INCOMPATIBLE WITH HIGH AMBITION FOR CIVILIZATION

About the most striking fact in connection with the war now raging is the confidence of the chief belligerent nations that theirs is the cause of civilization as against barbarism. But it is curious and significant that neither side seems to consider it necessary to say much about *what civilization is*. Is it not possible that this professed devotion to a common, but undefined end, may be the road to a rational adjustment after a time of the differences over which they contend?

The bitter international hatred on the one hand, and the intense national love on the other, with the consequent overthrow of reason now prevailing in Europe, will after a while subside to a considerable extent (pity that we must not expect it to do so fully) and reason will be in a large measure restored to its wonted place in guiding the world's affairs. Is it too much to hope that when this time comes, the leading nations will take the stupendous cataclysm through which they have passed as proof that the conceptions on which not only their political and economic systems rest, but also those pertaining to other foremost elements in civilization, need a searching re-examination? Should they undertake such a task, and should they still maintain that their concern in the great conflict was primarily, or even largely, for civilization, I do not see how they could do otherwise than try to formulate a definition of civilization upon which they could all agree and which should not be so general as to be devoid of practical meaning. Certainly, were they to approach the problem in the spirit and manner of science, they would begin by trying to formulate a definition of this sort. Nor do I see how they could arrive at such a definition without being thereby led to perceive that the war method of settling the great territorial-economic problem is fundamentally inconsistent with this conception of

civilization, and must fail to accomplish the end aimed at.

Which do the great civilized nations want most, continued progress in civilization, or all the lands and waters they can get hold of, no matter by what means and without reference to the interests of other nations? That is the question into which the present issue resolves itself. The realization of both ambitions is impossible. One or the other will have to be abandoned. More disastrously fallacious reasoning was never carried on than that according to which a nation's status in civilization is dependent upon its territorial and economic extent. Because a people cannot become a great world power unless they possess ample material wealth and a strong, efficient political organization, it by no means follows that the wealth must be great without limit. The reasoning that would justify strife for unlimited possessions just for the sake of having them, would be paralleled by reasoning that because the individual cannot live without food, therefore he should try to eat all the food in sight. I believe it will be recognized sooner or later that the biological ground on which these two cases rest is much the same. From time immemorial the enervative and degenerative effect of an inordinate desire for over-much wealth has been deplored. Such wealth has much the same effect as gluttony,

and for much the same reasons. True, the congestion of population in some countries furnishes a measure of excuse for the fallacy. This is particularly true of certain countries of Europe, the continent which in modern times seems to be the special breeding ground of the fallacy. But could European statesmen once rise sufficiently above the bewilderments of politics to enable them to see clearly how little the location of boundary lines has to do with the real problem of developing the potential resources of the earth and utilizing them for advancing civilization, it does seem as though they would open their eyes to the folly of spending so much energy, and time, and treasure, in fighting and getting ready to fight about these boundaries,— about who shall govern particular pieces of land and groups of people. The problem is not one of boundaries, but of greater civilizing processes; not of who shall govern a limited area, but who can best develop the spirit of civilization for the world at large.

We whose lots are cast outside of Europe gladly recognize that about the first and so far the best civilization has grown on European soil. But we cannot accept this as proof that only European soil is capable of producing the best of civilization. No European chemist has discovered ingredients in the soil of his continent that have peculiar virtues for the making of

civilized man. Wheat is wheat, and rye is rye, regardless of the soil that produced it, and the same is true of civilization. This does not imply that one locality is as good as another for wheat or rye, or that all varieties of these grains will grow as well in one region as in another; but that, given the numerous varieties of wheat and rye, these two species can be produced in many regions of the earth. What localities are and what are not able to produce them may be discovered, but cannot be determined by political or any other artificial means.

So it is with civilization. Those philosophers who would explain on geographical grounds everything men are and do, are committed to a theory that applies at best to savages. One of the chief functions of civilization is exactly that of subjecting nature, geographic influences with the rest, to man's intellect and will.

XI. A LARGER CONCEPTION OF COLONIZATION AND OF MISSIONARY WORK

Colonization and missionary work, understood in a far different, because broader and deeper sense than hitherto, will, according to the doctrine here upheld, have to be more a part of the business of civilization than it has been in the past. It is much more important now for the world's welfare that the colonizing nations should study the problem of coloniza-

tion than that they should strive for more lands on which to colonize; and to learn that "converting" the native peoples of uncivilized portions of the earth cannot be left wholly to religious organizations. Hereafter civilized nations will be more concerned about carrying their culture to sparsely settled, slightly cultured countries, and in doing this will find some rational,— that is, in the main peaceful,— method of locating and from time to time relocating political boundary lines. The absolute fixity of these lines constitutes insuperable barriers in many cases to the full development of the areas so bounded. In the very nature of the case it is impossible for war to change these lines in accordance with rational demands. The fighting of a duel between two farmers over the ownership of a piece of land could accomplish nothing towards increasing its productiveness. The interest of civilization, which all are professing to fight for, is not primarily who owns the piece of land, but who will make it produce most. Should someone contend that the duel method of readjustment is justified if the farmer heretofore in possession of the land did not make the best use of it and could not, while the other one could do much better, the important question must still be raised, but what if the incompetent farmer should kill the competent one? The better duelist is by no means necessarily the

better farmer. Again, if the better farmer should come off victor in the duel, would that of itself till the land? The indispensables for the end sought are industry, capital, and scientific agriculture; not challenges and rapiers. At best the duel could only fix the ownership on him who *might* do better with the land. It could secure no guarantee that he *would*.

In the matter of territorial distribution war cannot do what civilization needs to have done; and this fact is quite apart from the question of whether or not war deserves general condemnation.

CHAPTER II

WHAT SCIENCE COULD CONTRIBUTE TO AN ADEQUATE CONCEPTION OF CIVILIZATION

Assuming, then, the sincerity of the nations in their profession of concern for civilization, the problem comes to be one of convincing them that civilization is something considerably different from what it has been vaguely held to be. While science cannot hope to produce such conviction by its own unaided efforts, it has much to contribute that should operate powerfully toward such a conviction. An item of this sort is the store of information the several sciences of man have accumulated which reveal to us the overwhelming diversity and complexity of human nature, and of the human species taken in its entirety. These stores of knowledge have been accumulated directly and indirectly by all the sciences, but chiefly by biology, anthropology, psychology, and sociology. If one will take the time to acquaint himself with some of the fruits of investigation in these sciences, and

will then reflect that the play and interplay of all these varied elements in highly developed man is what we call civilization, he will find himself mightily sobered in his impulsions to pronounce what civilization is, or what things make for it and what ones against it, and what peoples are civilized and what ones are barbarous. Hardly anything more surprising, and to outsiders, more distressing, has occurred in connection with the great war than the readiness with which men of the highest attainments and character on both sides have pronounced the other side as greatly their inferiors in civilization.

I. MAN'S CAPACITY FOR IMPROVEMENT

Perhaps the most stirringly prophetic single statement that can be made relative to the achievements of science in the study of man, is that the results of such study do not warrant an attempt to fix a limit on man's capacity for development. The doctrine of human perfectibility preached by a group of French philosophers a century and a half ago may well be recalled in this connection, and the point made that the progress of science since then necessitates the fundamental modification of that doctrine to the effect that not the *perfection* of man is the goal of his evolution, but his passing to ever higher intellectual and moral levels.

Friedrich Nietzsche and his followers are looking rapturously forward toward a Superman because they have never distinguished between man becoming gradually and continuously better, and some imaginary being wholly superior to man. This summary of the position of science relative to the magnitude of the problem of man should be compared with what was said about its position relative to the magnitude of the problem of nature generally; and the essence of the cautionary remark made then holds good here: while the inductive study of the problem does not warrant the conclusion that man is infinite in the old theological sense, neither does it justify the conclusion that he is finite in the way our religious teachings have accustomed us to think of him. *Science furnishes the groundwork of a great rational faith in man's capacity for indefinite progress.*

Another item to be noticed which science is able to contribute toward such a conviction about the nature of civilization, and toward testing the desire for promoting it, has to do with a definition of what civilization really is. In an earlier page the remark was made that civilization is a higher category in the science of man than is race or people, nation or state; and that this is so because it is concerned with the integrative forces acting above and across the entities designated by these other categories.

II. VARIETY AND UNITY IN CIVILIZATION

To civilization as thus characterized we must now attend, and we must do so carefully because the conception runs strongly counter to that held by present day militarists and some statesmen who regard the state as the "be-all and end-all" of human effort.

The phenomena of coöperation, or coördination, or, as I prefer, integration, are far more widespread and fundamental in living nature, and so are more recognized by technical biology, than by speculative biology. We must consequently look a little at the strictly biological aspects of the subject. If I do this somewhat more extensively than might at first sight appear necessary, justification is sought in the fact that I find evidence on all sides that while general ideas about social and political questions have been greatly influenced by the theory of biological evolution, that influence has been almost entirely unaffected by the integrative aspect of the evolutionary process. For example, I pick up just now a new book bearing the title "A Theory of Civilization," the author of which has obviously read widely and thought earnestly and rather candidly. In the concluding chapter I find this: "Civilization represents the specific variation by which humanity, at any time, in any place, has secured the

superior variant strain through which it has been evolved into a position higher than that occupied by those who did not secure such a variant." While this statement about variants may be accepted as essentially true, it would be impossible for one familiar with the real facts of organic evolution to say that "civilization represents" this truth. According to our view, the variant aspect of civilization is half, and only half, the story. Beyond a doubt the modern development of individualistic and egoistic theory exemplified by writings such as those of Henrik Ibsen and G. Bernard Shaw, and culminating in the philosophy of Friedrich Nietzsche, is due to the fact that men highly endowed by nature on the esthetic side and profoundly interested in some aspects of human life, have erected their superstructures on a foundation of biological doctrine into the construction of which only half the relevant biological facts have been used. I conclude, therefore, that responsibility for the teachings of these men, tending as they surely do to the destruction of human society and so of civilization, rests more heavily upon science than it does upon art in whose name these men speak. They have taken their cue from modern biology, and their broader, more responsive imaginations and greater humanitarian sensitiveness have revealed the badness of the cue as this could hardly be

revealed by the more solid and stolid work of the scientists themselves.

III. BIOLOGY'S TESTIMONY REGARDING UNITY IN LIVING NATURE

The great prominence given by Herbert Spencer to the idea of movement from the homogeneous to the heterogeneous in evolution, has made the many readers of this author familiar with the diversifying aspect of evolution. This teaching, taken with that of the physiological division of labor borrowed by biology from political economy, and the corollary teaching of differentiation of structure, has brought it about that to many persons the terms development and evolution are almost synonymous with differentiation and specialization. Yet the inadequacy of this conception is obvious once one thinks a moment. The life history of any individual animal, especially of the higher kinds, is conclusive on this point. Mere multiplication of cells with an accompanying transformation of these cells into the individual and independent tissue cells of a horse or man would not by any means make a horse or a man of the tissue masses. Each cell and group of cells must be placed where it belongs. All the brain cells must go into the brain, and all the muscle cells into the muscles. But this proper placing of the differentiated cells is far from the whole

story. Their proper interconnection with one another, and their interdependence and interaction upon one another, has to be secured. The muscle cells have to be adjusted to one another, the brain cells to one another, and the liver cells to one another, and each group of cells or organ must be adjusted to every other group or organ.

Organization, or, again, as I prefer, integration, is as fundamental a principle in evolution as is differentiation. The fact is a commonplace so far as concerns the evolution of the individual, and is recognized in all careful definitions of organic growth, though the recognition is rarely adequate. As an illustration of this inadequate recognition, reference may be made again to Herbert Spencer. While this author recognizes the principle as fully, perhaps, as any writer on the general theory of evolution, and applies the term integration to it more definitely than any one else, yet an attentive study of his writings reveals that he conceives integration as more in the nature of an after-thought than as a basic principle of evolution; that is, it follows along behind differentiation, instead of being original and initial with it. The insufficiency of Spencer's view is readily seen by noticing such a familiar fact as that in the embryonic growth of man, for example, the nervous system, which is preëminently the integrating system of the body, is not later in development than the parts

it is to integrate. In fact, the spinal cord and the brain are about the first parts of the body to be laid down. The evolution of the individual is certainly not a differentiation of the individual and then afterwards an integration of it, but rather the simultaneous accomplishment of differentiation and integration. It is the production of unified diversity, or diversified unity, whichever way one chooses to state it. In fact, it ought to be stated now this way, now that, depending on where in a particular discussion one wishes to place the emphasis.

The integrative side of evolution, as manifest in the growth of the individual, is no less manifest in the functioning of the individual's parts after growth is completed. The integrative office of the nutriment-distributing system — the sap system in plants, and the blood and lymph systems in animals — is clear enough, as is also that of the nervous system. Considerable study has latterly been devoted to the nervous system from this standpoint. But the most important recent investigations on functional integration within the individual are those on the so-called internal secretions. The parts played by the products of the thyroid gland and the suprarenal body in maintaining the balance and health of the organism, not only during growth, but as well in functional activity after growth is at an end, has become a matter of common knowledge.

In a word, the organism has chemical means for keeping itself unified and in balance. So important a place have these unifying substances in the organism's economy that the applicable name, hormones, has been given to them.

There is another point at which the principle of integration is always tacitly recognized in practical biology, yet curiously enough is very little noticed in philosophizing about evolution. Reference is made to the fact that the place which organisms hold in the evolutionary scale depends as much on the extent to which the individuals of the various groups are organized, or integrated, as upon the extent to which they are differentiated. The animal kingdom is higher than the plant kingdom, not only because the individual animal is more differentiated, but because it is more integrated than any individual plant. Similarly, a dog is higher than a lobster, and a man higher than a dog, not merely because each is in turn more specialized than the animal with which it is compared, but quite as much because it is more integrated.

But what really interests us here more than integration in the individual, is integration between or among individuals to make associations and societies. Perhaps the fullest single statement this phase of the subject has yet received was at the hands of the Russian, Peter Kropotkin, in his book, " Mutual Aid a Factor of Evo-

lution." While most biologists and many sociologists are more or less acquainted with this work, it has attracted the attention of neither group to the extent that the general subject deserves. Kropotkin's book and other writings on the same subject have not appealed to students more strongly because no one, not even these authors, have fully grasped the idea that *organic evolution is just as fundamentally an organizing, an integrating, process as it is a differentiating process.* For two generations thought about evolution has been cast so exclusively in moulds of multiplication, specialization, antagonism, and combat to the death, that the incorporative, the coördinative, the constitutive aspects of the process, have had little chance of recognition. How foreign to our modern modes of thought is the idea that two things can be opposed and at the same time indispensable to each other! Or that two organic parts or organisms can compete with each other and both succeed! Yet in the actual system of nature these theoretical impossibilities occur everywhere. You must think in concrete terms to bring this matter home to you with full force. The extensor and flexor muscles of your arm are opposed to each other in action, and compete with each other for sustenance; yet not only do the opposition and the competition fall short of the " complete crushing " of each other, but the

success of each is dependent upon the success of the other. These two antagonistic groups of muscles were produced and exist and do their work because both are parts of a larger whole. The same must be said of any two members of any organic system whatever. The prevalent conception of an organic system seems to be that it is one in which the parts, though coöperating after a fashion, are yet essentially independent or even opposed to one another, as though they had been driven together from some wholly independent source and are only tolerant of one another pending a chance to separate again, each to go its original way. On the contrary, such a system is one in which the opposition of the parts to one another is constitutive each for the other, because unitedly they are constitutive of the whole system. It is amazing that there should be need of calling attention to such commonplace facts. Yet speculative biology and (trailing along behind it, one regretfully notes) speculative sociology almost utterly ignore them. Thought is a means by which truth may be discovered; but it may also be so employed as to make the most obvious, most familiar facts practically invisible. One of the most important and hardest tasks science has to perform is that of enabling people to really see commonplace things.

Another important fact about biological inte-

gration is the subordination or complete surrender of one or more of the original endowments by the elements in the integrating systems. Two distinct types of this must be recognized. First, there are those cases in which some of the attributes of the elements remain wholly undeveloped. For example, a low order of sensitiveness and contractility are attributes of all undifferentiated protoplasm, so that going back far enough in racial evolution we may say that nerve cells once had the ability to become muscle fibers, and vice versa. Similar reasoning would apply to all the tissues of the organism. The other case is that of the abandonment of certain well established functions in particular organs, resulting sometimes in the entire loss of usefulness of the members in question, and sometimes in the assumption of wholly different functions. Useless parts of which there are so many in the human body, the vermiform appendix being one, and parts like the thyroid gland, the original racial office of which was very different from that now performed by it, are examples of this second kind of abandonment.

An adequate treatment of sacrifice among men is impossible without taking into account the purely corporeal phenomena here adverted to. Nor is it enough to say that the yielding up of activities and prerogatives, which among human beings we call sacrifice, is merely analogous to

the relinquishment pointed out among bodily parts. It is not contended that a close parity exists between the two groups of phenomena. But they have these fundamentals in common: both pertain to the great process of organic evolution, and both are manifestations of the principle of organic subordination of parts to other parts and to the whole.

IV. CIVILIZATION AS A PART OF EVOLUTION

Let us examine the possibility that the promotion of civilization may become an object so strong among the foremost nations as to make them willing under extraordinary circumstances to give up peacefully, for the general good, certain advantages of territory or trade belonging to them. "Civilization" is the one-word designation of the grade of evolution for one organic species, *Homo sapiens* in respect to those attributes which set it off most sharply from all other species. It *is* evolution, though only a part of it, albeit an overwhelmingly important part.

Before proceeding to details a word of caution must be spoken, particularly to non-biological readers. Too close a parallel should not be drawn between the parts of evolution called civilization, and the simpler, more concrete parts known as physical evolution. In spite of the fact that there are certain elements common to

all evolution, as variation and adaptation, there is still a measure of uniqueness in the evolution of every group of organisms. The evolution of birds, for instance, presents in their peculiar mode of locomotion much that is unique, and so must be studied partly as a problem in itself. The same is true of the evolution of any other group. Much more of uniqueness should we expect, then, in the evolution of man at the higher levels of his nature.

There seems to have been tacit agreement with scarcely a dissenting voice, that in the relation between nations, commercial, political and military interests are absolutely paramount. This fallacious doctrine has been generally accepted because people so rarely distinguish clearly between the nation as a political unit and the nation as a cultural, or civilizational unit; in other words, between the nation as a state and the nation as a group of people bound together by certain cultural customs and institutions. Only a few authors seem to have made much of this distinction. The German political economist, Franz Oppenheimer, is one of them. This particular exception is the more noteworthy because theorizing on international relations in the absence of such recognition appears to have largely determined modern militarist doctrines, whether of the theocratic or the animalistic type; and both these types have, as is well known,

found most of their strongest champions in Germany.

Some of the consequences of this defective reasoning as they come to light in militarist expressions, are of simply incalculable importance, or would be were these doctrines put into practice. Theocratic militarists holding the State to be of divine origin, logically regard war as a divine institution. "God will see to it," Treitschke is quoted as saying, "that war always recurs as a drastic medicine for the human race." An attempt to harmonize this doctrine with the "law of love" of Christianity, apparently adhered to by this school of militarism, is made by contending that "Christian morality is personal and social," and hence that the law of love "can claim no significance for the relations of one country to another" (von Bernhardi). In other words, the law of love ceases at international boundary lines.

Analysis of the "law of love" among men proves indubitably that the phenomena thus designated are inextricably bound up with a whole series of other phenomena, partly physical and partly spiritual, these latter being coextensive if not identical with what all sound anthropology and sociology recognize as constituting higher culture or civilization. Now culture not only does not stop at international boundary lines, but at its highest levels and in

its most general aspects it heeds them very little; and its particular instrumentalities and modes of expression are in the highest degree cosmopolitan. In other words, reverting to the distinction between the political nation and the cultural nation, the conclusion seems unescapable that not only is the distinction of very great moment, but in the nature of the case will become more and more so as civilization advances.

We may say, then, that it would be utterly impossible for anyone who should see this distinction clearly, to contend that the "law of love can have no significance as between countries," unless he should deliberately throw all logic and regard for the facts to the wind. And I would insist with all the force I can muster that were this theory correct, we would be compelled to anticipate *that not only will wars not become less frequent and less destructive as time goes on, but they will increase in number and violence until civilization will become so exhausted that the resources of science and industry during the intervals of peace can no longer provide the means for making the war machine more effective.* The query may well be made, do not recent world-politics, so-called, and world-warfare in the present situation confirm this forecast? It is doubtful if the militarists

themselves have seen this, or would be quite willing to maintain the desirability of such an outcome.

CHAPTER III

CIVILIZATION LOOKED AT STILL MORE CLOSELY

The next step in our undertaking must be to assemble, as a preliminary to their further treatment, a number of the results scattered through the discussion so far. These are: recognition of the civilizing processes as the evolution of man in his higher attributes; the conception that integration and differentiation in evolution are coordinate; the perception by science of the prodigious diversity and complexity of mankind, both as to species and as to individuals, with the collateral perception of his capacity for development; and the inexhaustibility of the earth as the home and nourisher of civilized man as contrasted with barbarous man. If we view certain facts and tendencies that have recently manifested themselves in the relations among civilized countries in the light of these principles, I believe the difficulties in the way of some such solution of the territorial problem as is here suggested will be found somewhat less formidable than they seemed to be at first sight.

I. CIVILIZING PROCESSES AND MAN'S HIGHER ATTRIBUTES

Taking these matters up seriatim, the proposal to regard civilization as a part of evolution comes in for examination first. One of the great advantages in this would be an escape from the deadening notion of fixity that so dominates thinking about civilization. When one reflects on the extent to which action is guided by precedent, he comes to see the enormous importance of this. It appears justifiable to assume that the through-and-through evolutionist is exactly the one in whom the "historic sense" is preeminently keen and sane, and so the one to whom the dictum, "history repeats itself," should have its deepest meaning. But alongside this much-used dictum the biological evolutionist, because of the vastly more extended segment of progress with which he is familiar, places the equally important dictum, "evolution never repeats itself." While the main purpose of this essay prompts us to keep the integrative side of evolution in the foreground, just here we have to emphasize the differentiative side. The statement, "evolution never repeats itself," is only another way of saying that there is no evolution without differentiation and modification. The only evolution to which those species that have existed for some millions of years have been subject since their origin, has been in the individuals

that have succeeded one another for countless generations. It is worth while to note that all the oldest species are relatively low species, the higher ones being just those that transform most rapidly. To the evolutional type of thinker there is no exact repetition of any event or set of conditions, *especially in human history*, so he will always appeal to precedent with some grain of qualification; and if he is dealing with a particular evolutional series concerning which there are grounds for believing the process is still going on, as is the case with civilization, he will refuse to be influenced by precedent more than in a rather general way. The anticipatory, the projective character of evolutionary ethics, already referred to, is undoubtedly one of the most distinctive, most inspiring things about it. To bring this reasoning home, no really scientific evolutionist would think for a moment of justifying, without the most careful qualifications, the breaking of a contract by an individual, or a treaty by a nation, on the ground of historical precedent.

Again, protagonists of Imperialism, and of war as the instrument for attaining it, speak of the "right of conquest" as something sacred and inviolable because "in the past it has always been recognized." Such arguing is intolerable to a consistent evolutionist. In the use made of the doctrine of evolution by political leaders,

diplomatists, and militarists, the utmost contradictoriness and confusion prevail. On the one hand they borrow from biology and use with the greatest assurance such vague phrases as "struggle for existence" and "survival of the fittest," while on the other hand they seem quite oblivious to the essential idea of forward movement and growing interdependence among men, the very essence of progress in civilization.

Insufficient attention to the time element in progress seems partly responsible for the unfortunate inconsistency. So the need of giving more heed to this element is another reason for treating civilization as a part of evolution. The assertion heard over and over again that man is no longer progressing racially, appears to be based always on the little segment of his history since he became able to write. In spite of all that anthropology and palæontology have done to increase the length of the known period of man's career, dominant ethical theory seems to be essentially what it was when human history was supposed to have begun with Adam and Eve, or Romulus and Remus, or other full-fledged mythical personages. The considerable body of reliable knowledge about European culture 20,000 years ago when Cro-magnon man was producing the mural paintings in the caves of Western Europe, appears to have had little or no effect on European culture of today, or at

least on its politics. Just at present the doctrine being put into practice seems to be that for several centuries civilization has not advanced; that because it has not, there is no ground for supposing it ever will; and that this being so, the best thing for man to do is to abandon all elements in culture excepting those that increase his efficiency as an animal, and "play the game" on this basis as long as there is enough substance and strength to keep it going.

Another advantage to be derived from thinking of civilization in terms of evolution is that attention would be focused on the fact that evolution not being of necessity progressive, but may be regressive, civilization is also subject to backward movement. This should be specially useful when people become conscious of personal responsibility for the direction a particular aspect of civilization takes.

The present promulgation of eugenic teaching is undoubtedly fostering a public consciousness of this sort, at least so far as purely physical evolution is concerned. But remembering that on earlier pages we have emphasized the fact that the particularly unique thing about the human animal is his humanness,— that is, his intellectuality, morality, and the rest,— we shall not fail to note that public consciousness of responsibility for evolution on these higher

planes is most important. Assuredly it is well for man to attend to his evolution as an animal; but vastly more important is it for him to attend to his evolution as a *human* animal.

Third, and finally, an advantage of changing the terminology of civilization into that of evolution is that the distinction between differentiations and specializations which are integrative, and those which are not, but are disintegrative, would become clearer. But the discussion of this falls more properly under the next head.

II. STILL MORE ABOUT THE COÖRDINATENESS OF VARIETY AND UNITY

The second item in the inventory, it will be recalled, is the conception that evolution is as fundamentally integrative as it is differentiative. According to our way of viewing evolution, and civilization as a part of it, the question of whether or not man has progressed since the Old Stone Age or the New Stone Age, or the Homeric Age, or the Arthurian Age, or any other age, is not to be answered by examining crania alone, or cave art, or Arthurian or Aztec art alone, or Greek literature and philosophy alone, or Roman law alone, or the theology of Egypt or of the Reformation alone, but by taking all the facts available from all these and all other sources, and considering their bearing on the question of extent of differentiation and in-

tegration. I may call attention again to the possible serviceableness of the methods and outlook of science to the study of civilized man. Biologists who occupy themselves with the description and classification of organic beings are much guided by an aphorism which would unquestionably be useful to those who deal with great problems of human life. It is "neglect nothing" that will help in deciding where a particular individual or species should be placed in the system of classification. It should be explained that this aphorism does not mean "know everything." It, of course, presupposes a good deal of knowledge, and the more the better; but the main factor in this meaning is "do not fail to take account of all you know about your specimen in your final conclusion." It is quite as much an appeal for balanced judgment as for extensive knowledge. Starting from the conception of evolution and civilization advocated by us, and going along under the steadying influence of this aphorism, I believe the strongest kind of a case could be made for the proposition that the human race stands today at a distinctly higher evolution level than it has ever before reached. On the cultural side the human animal is more differentiated and more integrated in this era than ever before; and for us that is the criterion of evolution and of progress in civilization. Several of the social and

political theories taught by Plato and Aristotle and by the authors of the Old Testament Scriptures, cannot be explained on any other theory than that they represent a stage of human evolution on the whole distinctly lower than that at which the modern civilized world stands.

The question of the heritability or non-heritability of cultural attributes in the narrow parent-offspring sense is secondary, even though of great importance. We biologists, in this period of intense research on heredity, are prone to forget that heredity is historically a social and economic conception, rather than a biological one. The idea of social, and as one might say, national, heredity has been dwelt upon by several authors, but its importance has been overshadowed by discussions on individual heredity.

III. VARIETY-PRODUCING AND UNITY-PRODUCING FACTORS IN CIVILIZATION

(a) Science

The main task under this second head is to consider some of the most potent integrative, and likewise most differentiative, forces among the nations that become operative through man's higher attributes. There seems no chance to doubt that physical science is the most positive and wide-reaching of all the integrative forces on account of the absolute universality and

trustworthiness, so far as practice is concerned, of many of the most useful discoveries and inventions. No matter how strange men may be to one another, how diverse or antagonistic their customs, tastes, and interests, such things as the telegraph, the steam engine, the dynamo, antitoxine, and the prediction of eclipses, are exactly the same to all. All who reap the practical benefits of these, made possible by science, must similarly conform to their underlying principles, regardless of national idiosyncrasies. The power these things have for unifying the human species could be made to contribute incalculably more to the good of mankind than hitherto. Who can doubt, to illustrate, that a strong and spacious bridge across the chasm separating Occidentals from Orientals could be founded on these natural principles? It is exceedingly deplorable that notwithstanding the eagerness with which Orientals are adopting these instruments of civilization, the assertion is still heard on all sides among Westerners that the psychology of the Easterner is "absolutely different" from that of the Westerner; that the peoples of the two parts of the world have "nothing whatever in common." Nobody familiar with the methods and imbued with the spirit of biological description and classification would ever make statements of this sort, being deterred on purely natural history grounds, and not necessarily to

avoid ethical and international sinning. It may be confidently predicted that an international agreement by which no citizen of any country should be granted a passport for visiting any other country, whether for business or pleasure, without furnishing proof of being familiar with the main evidence on which the anthropological doctrine of the unity of the human species rests, would make strongly for international peace and good will.

The natural community of interest among investigators in pure science, particularly among the investigators in the sciences upon which medicine immediately rests, is another aspect of science which operates powerfully as an internationally integrating agent.

The extent to which governmental action might make use of, and in turn promote national science to the end of furthering world civilization, is great beyond calculation. And there can be no doubt that such influence would be almost wholly, even though undesignedly, against war. When one considers the close and vital interdependence which the physical science of each country has with that of every other country through its problems and methods of work, its instrumental equipment, its published researches, and the associations among its scientific citizens, he sees that science acts as an integrating agent among the nations in some such

way as the nervous system and the internal secretions integrate the parts of the animal body.

(b) Trade, Finance, and the Labor Movement

Another international unifying agent, hardly less widely operating than science, is trade and finance. Nor can there be any question of the power of these agents when the transactions are conducted by men educated in the languages and customs and conditions of the peoples with whom they deal, and to these qualifications are added those of sympathy and high moral character and ideals. But at best business is a somewhat less potent unifier than science because of the character of the competition that is inevitable to trade. This brings in an alienating or disruptive factor which too frequently goes far toward offsetting its integrating force.

From the scientific standpoint, to be placed close along side trade and finance as a factor in international civilization, is the modern labor movement, working here intensely toward integration, and there as intensely toward disintegration, and yonder toward differentiation. No one in this day tries to minimize the importance of this phenomenon. Even a dabbler in problems of modern social evolution must take note of the "Communist Manifesto" of Karl Marx and his associates.

(c) Religion

But while physical science, international trade and finance, and the labor movement, are probably the most generally and the most positively operative factors toward international unification, they are not the most powerful for particular cases. Supremacy in this regard belongs almost certainly to religion. No other agency has ever bound together so many millions of people of such varied race and language and political affiliation as has the Catholic Church. This can hardly be questioned even after due allowance is made for wrecking schisms which have from time to time arisen in this mighty creation, and the partial failures, not a few, of the unifying forces to operate across certain racial and political boundaries.

And alongside the Catholic Church, one of the oldest existing religious organizations, may be placed the Young Men's Christian Association, one of the newest, as another example of the internationally unifying force of religion.

But while religion is in some cases one of the mightiest of integrating forces, it must be recognized as in other cases a mighty disintegrative force, and in still others a genuinely differentiating force. No other occurrence in the whole history of Western civilization has penetrated so deeply into that civilization as did the

reformation particularly identified with Martin Luther. And this was not disruptive merely. The theological doctrines and churchly forms that distinguish Protestantism from Catholicism, and the innumerable sub-doctrines and lesser deviations of form that have arisen in Protestantism, are differentiative in the truest sense. And what an example of "diversified unity or unified diversity" modern Protestantism furnishes us!

In the social service and foreign missionary aspects of religion there are unquestionably enormous latent forces for the integration of nations and peoples which judicious political action could utilize without running seriously athwart the blind dogmas and withering prejudices and superstitions so prevalent in all institutionalized religions.

(d) Race

The question of race from the standpoint of differentiation and integration may now be touched upon. As our discussion is throughout aimed primarily at the evolution of man on the higher side of his nature — on the evolution of the *human* animal — it would be out of place to go far into this question. The phase which must receive some consideration is that of so-called race psychology, and more specifically, the question of race prejudice. "Birds of a feather

flock together." There is no doubt about it; and it is surely as true for humans as for avians. Nor is there any doubt about the implied obverse. Birds of different feather flock apart, against each other if circumstances give them occasion to do so. No biological fact is more certain so far as general principles are concerned. The question is what, exactly, is the meaning of this flocking together and apart and against? The practical question is, how much of what passes under the name of race prejudice is in reality prejudice and nothing deeper, and how much genuine physiological-psychological fact? Unfortunately, neither biology nor psychology nor physiology have gone far toward answering the question. Yet no other interest calls for an answer so loudly as do political interests, and particularly international political interests.

This being so, and it being highly probable that systematic and persistent study by the competent sciences would gain much light on the vexed question, it follows that such study ought not to be neglected any longer. One need not suppose that to secure such studies direct politico-international action is necessary. Should the political leaders in the foremost nations become alive to the importance of such knowledge and to the possibility of getting it, those of each nation acting chiefly within its own precincts, and appealing to its own scientists in these

fields, would undoubtedly soon have investigations under way.

(e) Language

The only other item that will be touched upon under this second head is language. This is taken up last because, being a sort of matrix in which all the others are imbedded, it is in a sense the most important of all. The marvelous facility with which language, particularly while yet spoken language exclusively, differentiates into varieties, subspecies, and species (using the naturalist's terminology), and the great complexity these sub-divisions may acquire, are matters of common knowledge. And equally well recognized is the mighty unifying force there is in a common language. So well are these things known, and so large a part do they play in many industrial, educational, political, and religious undertakings, that they need be no more than mentioned. Any comment on the subject would be only another way of saying that language is enormously powerful both as a differentiating and as an integrating force.

The special point to be brought out may take the interrogative form. Has not the world's experience gone far enough to justify the dictum that, given two peoples with distinct languages, and enough advanced in civilization to have produced a considerable written history, formulated

laws and an extensive literature, an attempt to unite them into a political nation, unless one or the other can be persuaded (not compelled) to give up its own language and adopt that of the other, has almost no chance of success and ought not to be made? If such a formulation is called for by the facts, and if the foremost nations are indeed greatly concerned about civilization, it would seem inevitable that "world politics" should be greatly influenced thereby.

CHAPTER IV

DIVERSITY AND COMPLEXITY OF MAN, ACTUAL AND LATENT

I. POLYNATIONALISM AND HUMAN CULTURE

The third item to be considered is the "diversity and complexity of man, both as to species and as to each individual." A German statesman and professor of history, Hans Delbrück (*Atlantic Monthly*, February, 1915, page 242) said since the war began, "All modern culture in all its wealth rests on polynationalism." By what reasoning the author would establish this proposition I do not know, as I am unfortunately not acquainted with any of his writings except the short but telling article in which this statement occurs. From what comes immediately after, however, I am led to infer that his argument would be different from mine, though to the statement itself I would give unqualified assent. He continues, "If Germany and Austria are victorious in this war, the freedom of the nations will be preserved, because, no matter how strong Germany emerges from the struggle, she will still be far too weak to maintain a world-

dominion. Germany lacks the mass, the bulk, the weight, and must rely for power on greater tension, activity, and effort."

Should one infer from this that had Germany the power after the war she would dominate the world? Is it implied that the freedom of the nations will be preserved only because Germany will be too weak to dominate? Nothing in the article requires that one assume an affirmative answer to these questions, and I do not choose so to assume. My purpose in referring to these statements is that they furnish a convenient starting point for the reasoning I wish to present.

See how readily the statement transforms into the terminology with which the reader has now become familiar. All modern civilization,— that is, *human* evolution,— rests on integration among many nations. While the two statements may mean the same thing, they do not necessarily. In Delbrück's formulation, culture may be used with the implied distinction so current in Germany between *culture* and *Kultur;* between culture as a certain breadth and depth of intellectual, esthetic, and religious development, and of sympathy among individuals, and the observance of social amenities; and that diversified and unified strength of political, military, and industrial life, which belongs to the nation primarily, and which constitutes Kultur.

The thesis I present is that culture as applied to modern man should be understood to be the same thing as civilization, and that it is polynational, not by chance or tolerance, but by the very nature of men and things. The polynationalism upon which, according to this thesis, civilization rests, is not one of temporary adjustment pending the time when some one or a few nations shall have gained sufficient mass and power to enable them to absorb or dominate all other nations. Rather is it of the reciprocal, the mutually constitutive type which we find exemplified everywhere in the biologic world. *Polynationalism becomes, then, structural internationalism.* This view puts us in a position to understand how it is that the term culture has been found in these later times a useful synonym for civilization. It is because the word, going back to the Latin word *colere*, to till, to fertilize the soil, and sow the seed, and reap the crops, expresses so well what people do for themselves and for one another in developing themselves, without reference to who they are or where they live. The term *civilization* seems to have proved insufficient to express all that students have wanted to express with it, in that it refers primarily to what people are because of where and how they live. The civilized man is the citizen, and the citizen is, first and foremost, the dweller in a city. Only secondarily is the conception of

civilization expansive enough to include even so much as the nation. Originally, it stopped with the much smaller, simpler group, the *civitas*, the village, the town. But that is not all. As a historical fact, it seems to have been a family matter at the outset. In his "Principles of Western Civilization," Benjamin Kidd gives an illuminating discussion of this subject. His studies, he tells us, furnish direct evidence that "the fundamental conception which throughout the whole period of Greek and Roman history underlies the bond of citizenship, rests back on the bond of the institution of Ancestor Worship, on the one hand, and on an immense period of military development in the still earlier past, on the other" (page 172). Obviously the term culture is much broader of outlook and more inspiring than is that of civilization. Highly significant is the fact that culture as thus used is said to be largely a thing of the nineteenth and twentieth centuries.

II. HUMAN CULTURE COMPARED TO AGRICULTURE

How is all this relevant to the topic in hand, "the diversity and complexity of man, both as to the species and as to each individual"? Probably no reader fails to see the relevancy in a general way. But only those who possess considerable biological information and occupy the

viewpoint of this essay will be likely to see it in detail. Let us go back to the agricultural basis of the word *culture*. What is implied in the much used phrases, "scientific agriculture" and "intensive agriculture"? Whatever else may be implied, this much is certain: an agriculture from which the largest returns possible shall be secured. And this means two things at the very least: that the most shall be made of the particular crop under cultivation; and that the best possible shall be done with the soil and other environmental elements that surround and condition the crop.

The question with which we are concerned is, how is the most possible to be secured from the crop which is the animal species *Homo sapiens?* Let us not neglect the point that the whole species, not merely some one sub-species or variety or geographical race, is the material, as are also all the desirable attributes of the individuals. See, now, where the analogy of this human culture with agriculture leads us if consistently followed. Take wheat as the basis of the comparison. From the standpoint of scientific agriculture what is the effort for this crop? In each locality where the cereal is grown it is to find varieties suited to the climate and soil of that special region, then to improve as much as possible attributes of those varieties which experience shows are essential to getting the most

from the crop. This makes the problem of wheat culture in a sense a local problem. In California, for example, the great problem is to increase the proteid content, while resistance to rust is of secondary moment. In Minnesota, on the other hand, these two desiderata are reversed in importance. But in both localities improvement of varieties as to yielding capacity is sought. The same reasoning holds for any crop whatever, plant or animal. A matter deserving the utmost consideration, not only for wheat culture itself, but as a type of culture with which to compare human culture, is the almost limitless capacity that wheat has for modification and adaptation, once it is taken in hand by intelligent and skilled cultivators. This leads to the heart of our comparison — the cultivation of man in the light of his capacity for modification and adaptation. And we must not for a moment lose sight of the twofold aspect of his capacity: the aspect revealed by considering the species as a whole and its distribution over the earth with all the varied environmental conditions therein implied; and that revealed in each individual.

If feelings of hostility are arising in any reader's mind on the ground that the proposal to take such an agricultural view of human culture is running eugenics into the ground even more deeply than the maddest eugenists themselves have run it, I would remind him of the recurrent

emphasis placed on the fact that the unique, and hence chief, thing about man's evolution is his intellectual, esthetic, moral, and religious evolution; and that this necessarily implies that the culture must be first and foremost *self* culture. It must be self-conscious and self-responsible. So far as the modern movement for race improvement rests on the doctrines of heredity, which are based in turn on Weismann's germplasm hypothesis, it is seriously defective in that heredity as thus conceived is essentially fatalistic; that is, it relieves individuals from a keen and broad sense of personal responsibility. But this is no place to go into the subject.

III. THE ABUSED HYPOTHESES OF NATURAL ECONOMY AND NATURAL SELECTION

It is desirable to return to the biological field in order to correct two other unfortunate applications of biological doctrine in human affairs. These are the so-called economy of nature, and natural selection. As applied to living beings, the first mentioned doctrine is based on such physiological facts as the inability of the animal organism to use more than a fixed amount of oxygen in respiration even though considerably greater quantities be always available; and, on the developmental side, the inability of almost all individual animals to grow beyond a certain fixed maximum size, and the general tendency in the

evolution of the animal kingdom to reduce the number of repetitive parts *pari passu* with the increasing efficiency of a few of these parts, as illustrated by the small number of locomotor members in vertebrates as contrasted with arthropods. There are many such facts, so no one can question their importance. But there is another body of facts no less numerous, so no less important, that are the very opposite of these in tendency, and so preclude the possibility of laying it down as a general law that nature is niggardly.

This opposite tendency is exhibited more strikingly than elsewhere, perhaps, in propagation both individual and racial. By what sort of psychological sleight-of-hand can anyone make such phenomena as the rapid and incalculably profuse multiplication of individuals in many species, particularly of the lower orders, look like natural stinginess, or even moderate economy? If anyone accustomed to think of living nature as economical will come to the Scripps Institution for Biological Research any summer, and watch miles and miles of the sea take on in the course of a week or two a greenish-yellow tinge by day, and a capacity of emitting light by night; will try to estimate the number and rate of propagation of the single species of microscopic plant which usually causes these phenomena; his notions will probably undergo a

great loosening up. And if this particular case is insufficient to bring his theories into conformity with facts, we will help him to see the propagative capacity of certain little animals called copepods of the crustacean order, and then the same capacity of the sardines which eat these crustaceans, and in turn the same capacity of the albacore which eat the sardines, and in their turn yield a rich harvest of a useful and pleasant table article to the whole nation, via the canneries of Southern California. Nothing in the results of zoological research is more impressive than the prodigality of the animal world taken as a whole, whether regard be had to number of individuals or number of kinds. No zoologist whose intellectual retina is not largely a blind spot can fail to see this. The blinding power of sophistry was never more strikingly exhibited than in its ability to make man declare while looking at such phenomena as the propagation of the common house fly and man's efforts to exterminate this pest, that nature produces only just as many individuals as are necessary to insure the perpetuity of the species.

The diametrical opposite of this comes much nearer being a general truth. Nature tends to produce an unlimited number of individuals, the only limitation being that of space for them to occupy and food for them to eat. Nor is this inherent tendency to multiply individuals the

whole evolution story. An inherent and powerful tendency to produce varieties, species, genera, and so forth, is hardly less clearly manifest, as witness the prodigality of the insect world in this regard. Darwin's proposal to make "overproduction" of individuals help explain the origin of species by using it as an essential element in his natural selection hypothesis, was surely a master stroke at finding a natural explanation for a puzzling natural phenomenon. Unquestionably the hypothesis has served the end of "stimulating research." But he himself made too much of it, as he saw and acknowledged before he died. The abuse of it by some other biologists, notably by the Englishman, A. R. Wallace, and the German, A. Weismann, to make it serve other speculations of theirs, has done incalculable harm, not only to biology but to sociology and to human welfare generally. The doctrine that all human progress is accomplished by somebody's beating somebody else, usually to the death, has had such vogue during the last few decades, particularly in business and politics, that it sometimes seems hopeless to get people to see how far it comes from agreeing with all the relevant facts. Indeed, as for business, so strong has been the effort to make practice conform to the doctrine that the doctrine has been made to seem true. Men have taken whatever measures they deemed

necessary to overcome their competitors, and then have justified their conduct by appealing to the phrase "the fittest survive." They have started with the hypothesis (an hypothesis being always something not proved) that progress is due to the survival of the fittest, and then have sinned against logic by reasoning that their own survival proves both the truth of the hypothesis and their own fitness.

IV. THE MIGHTY POWER OF DEVELOPMENTAL FORCES

That biology has not discovered all the causes of the growth of species is certain, but neither has it discovered all the causes of the growth of individuals. The two phenomena are in the same box so far as concerns complete explanation. The one thing science is sure of is that both processes are natural and not supernatural. Whatever and howsoever many causes there may be contributing to organic evolution, there is no question as to the stupendous "go" of it. Colonel Clark's squash that was found able to lift five thousand pounds by its growth power, is now known to have been in no wise exceptionally strong. Professor George E. Stone has lately (*Popular Science Monthly*, September, 1913) told of his observations on a black birch, "one root of which has entered a fissure in a large boulder and is slowly but con-

stantly lifting this enormous weight." Measurements and specific gravity determinations on the boulder, he tells us, find it to weigh eighteen tons. There are now on record careful measurements of the growth force of many kinds of plants, but unfortunately none or very few on animals. A study of the strength of the bandages required to prevent the Chinese girls' feet from growing would be instructive; but I have not been able to find that such a study has been made.

It is certain that a portion of this power of growing plants and animals is due to such well-known physical forces as osmosis, capillarity, and surface tension. Pieces of dry wood or rope are known to exert great power when wetted and allowed to swell. And there is no doubt that the whole phenomenon in living beings rests back on chemical and physical action. But certain is it also that increase in mass of living substance and cell multiplication are forms of energy in some measure unique just as muscular contraction is. Now in the evolution of the individual much of this growth force is devoted to producing a mere facsimile of the organism's ancestors; but there are quantities of evidence that some of it goes to make the individuals somewhat different from their ancestors; that is, to make different *kinds* of individuals the very essence of varieties and species.

This sort of growth is probably the main factor in producing those determinate or directed evolutionary series that show with special clearness in palæontology, the only direct historical record we have of racial evolution.* Taking the whole living world together, we must look upon the human species, especially on its higher, its spiritual side, as endowed in hundreds of attributes, with incalculable powers of growth and functioning. The human species, with all its endowments, is a Niagara Falls whose powers are only partly utilized. It is a Nile Valley, or an Imperial Valley, awaiting irrigating water to make its rich soil produce more abundant harvests. It is Indian corn still under crude agriculture, with few of its potentialities yet developed. In this connection, the subject of latent and hitherto unrecognized powers of human beings, so impressively treated by William James in his well-known address, "The Energies of Men," should be recalled.

* Those chemically-minded biologists whose scientific conscience permits them to ignore or reject the vast mass of evidence for determinate evolution presented by general zoology and botany, because they fear such recognition would commit them to vitalism (though it would not necessarily), ought at least to be influenced to some extent by such an argument as that recently made by Professor Arthur Dendy (Progressive Evolution and the Origin of Species, Amer. Naturalist, March, 1915). This biologist dwells on the idea that "progressive evolution must follow as a necessary result of the law of the accumulation of surplus energy."

A large mass of biological, anthropological, and psychological data is incontestably opposed to the pronouncement that all men are inherently and hopelessly lazy, and so by nature are bound to work only when they are compelled to, either by external force or physical want. The conception of latent natural energy as applied to civilized man does not imply that every man is able to do anything and everything. The fact of organic variation is, for the logically intelligent, a sure antidote against such interpretation. It simply means that every normal human being possesses much more energy and desire for action than he manifests under ordinary circumstances, and especially circumstances which compel him to work against his best talent and will and liking.

The problem of human culture, according to this view, consists in *guiding* these latent forces. They need fostering here and checking there. Often they may be advantageously transferred from one employment to another. They must be correlated and balanced,— in a word, integrated. In the restricted field of formal intellectual education, a few modern leaders have grasped this principle quite firmly. Many parents and teachers have seen it more or less distinctly. But as a general conception of progress in civilization it seems to have received almost no effective recognition.

It is now the common practice among agricultural statisticians to talk in world terms about all the main crops. The world's wheat supply, its corn supply, its beef supply, and its cotton and wool supply, are known to an approximation close enough to serve as a basis for reasoning in several ways. Why not be moving towards similar treatment of the world's human crop? There are abundant estimates of the earth's population. But little effort seems to have been made to calculate the civilizational value of this crop as a whole. Hence the utter lack of check on a particular nation's tendency to assert its own custodianship over the jewel of civilization. Could an international society for the study of civilization appoint a committee consisting of representatives of all the foremost nations, to define civilization and draw up a brief statement of what each nation has contributed, and could this report become generally known, we may confidently predict that boasting on the part of any of the signatory nations that they are preëminently the civilized nations of the earth would be at an end. Surely it would be for those which are in very truth foremost. A certain sensitive regard for the feelings of others and dread of proclaiming one's own virtues being an indispensable attribute of high culture, it would be as impossible for the best citizens of a nation really highest

in civilization to assert their country's superiority as it would to assert the general superiority of their own mothers and fathers. The habitual braggart, whether by word or deed, is an object of detestation to civilized man. An international society of the sort suggested above might be expected to put an anti-brag article into its constitution. This in itself would do much to promote understanding and good feeling among nations.

V. THE INNATENESS OF DEVELOPMENTAL FORCES

Such a way of viewing human culture and the problem of its advance could not fail to bring home three points of great practical importance. First, the forces of progress are essentially self-acting, so that in a very fundamental sense there can be no such thing as *creating* a demand for articles in trade; or of *giving* an education to the young; or of forcing political, moral, and religious ideas upon a people. The most that can be done is to create favorable conditions for the development of the latent capacities. If anyone is disposed to regard the refinement of definition of the terms *create* and *produce* here suggested as scholastic quibbling, let him reflect that no amount of advertising or other "promoting" could *create* a demand for, let us say, automobiles among chimpanzees,

even though rapid travel might be of as great survival value to them as to men. Nor could the best teachers *give* gorillas an education in scientific forestry, notwithstanding such education might be of great use to them. The second point is that looking upon the culture-force in this way sets out in clear light the *inevitableness* of many, many tendencies among civilized men. Failure to see them in this light is responsible for innumerable ill-advised or futile efforts at suppression made on all sides. Unquestionably, an elaborate system of fostering and checking these forces is, as above indicated, indispensable to progress. But undoubtedly, too, such a system can be wise only in so far as it is founded on the best understanding attainable of the nature of the forces at work. Take, by way of illustration, the problem now so urgent in the United States,—a tendency of the population to flock into the cities. The extent and persistence of the tendency must mean that it is not wholly artificial. The only wise way of dealing with it is to analyze it as fully as possible in order to find what elements in it are good and what bad, what ones need fostering, what ones need checking, and what measures would be most likely to accomplish the ends aimed at.

The third point is that, viewing culture

forces thus, and having regard to their variety, as well as to their strength, brings out not only the legitimacy, but also the desirability, of variety in civilization. This touches the question of internationalism. The idea has already been expressed that the nation is an essential instrument to the promotion of civilization. We reiterate the idea now, but from quite a different standpoint. The infinitely varied capacity of men is fostered by national life. Social customs, literature, painting, sculpture, and the drama, seem especially given to take somewhat different forms in different nations; and who would hesitate to admit that these great domains of human concern are made richer and more interesting by such variety? Who would wish to have the variety diminished? Do we not enjoy and profit by Japanese art largely because it is different from our own? Should we not regard it as a calamity rather than as a gain to civilization, were the Orientals to put aside altogether their social customs and adopt ours? Surely an open-minded, open-hearted citizen of any nation, no matter how ardent and lofty his patriotism, must grow larger and better of soul by reason of the fact that he can find some good things in the culture of other nations which he cannot find in his own; and this without detracting one jot from the love

of what he has at home, or his appreciation of the achievements and his devotion to the institutions of his own land.

VI. ARTIFICIAL EMPIRES VIOLATE NATURE'S PRINCIPLES OF VARIETY AND UNITY

A few paragraphs back, the prediction was ventured that could certain conditions there indicated be realized, boastfulness would be at an end. From considerations like those just adverted to, the number of which might be easily multiplied a thousandfold, another enemy to civilization quite as dire as boastfulness would also be at an end. Reference is made to the ambition for world empire that from time to time in the recent history of the human species has become an obsession of a few men abnormally endowed with capacity for leadership in war or politics, or both. To the biologist, familiar as he is with the innumerable grades of success and failure attending the forward-movement of organic evolution, nothing is more interesting than the great empires, so-called, which in the course of human progress have come into being, lasted for a day, and disappeared, leaving only scattered marks on the territory over which they extended, on the pages of history, and in the imaginations of succeeding generations. Take the empire of Alexander, with its hodge-podge of races, lan-

guages, grades of culture, and social, religious, and political institutions; and held together by bonds no stronger than a few sacrifices by the conqueror to the gods of the conquered, a few marriages between the invading soldiers and the women of the subdued peoples, and the futile efforts by the hero to force his governmental policies, if such they could be called, on the subject countries. The biological evolutionist cannot avoid comparing such empires with animals like the giant devil-fish and squid, which though huge in bulk and mighty in grasping and devouring capacity, are still inchoate so far as true animal greatness is concerned; their chief integrating organs, the blood and nervous systems, being of notably crude and inefficient pattern. And what an assortment of such empires European history in particular presents! One needs to mention only the Roman Empire, Charlemagne's empire, and Napoleon's empire.

A profound knowledge of history is not necessary to reveal something of the cost in treasure and blood resulting from the efforts of strong men to force their ideas and wishes upon their fellows. A particularly striking, and from one standpoint, surprising, thing is the extent to which men professing the Christian religion have been guilty of this folly.

It began at least as early as the fourth century of our era when Theodosius I, an especially

zealous Christian Emperor of Rome, tried to make all the pagan parts of his empire Christian by edict. After defining who were entitled to be called Christian, he said in one of his numerous edicts, "we judge that all others are extravagant madmen"; and that "besides the condemnation of Divine Justice, they must expect to suffer the severe penalties which our authority, guided by Heavenly wisdom, shall think proper to inflict upon them." The results of this policy as touching one lot of people is summed up by a German historian, Adolph Erman, thus: "The establishment of the new religion was the death-blow of old Egypt, for a people is dead when it has denied its gods." This is a type of many experiments furnished by the history of Western civilization.

An unbiased witness of the present European upheaval searches vainly through the published utterances of Wilhelm II of Germany and things that have been written about him, for proof that his face is set positively against this centuries' old conception of a Christian ruler's duty. The evidence is ample that until now, at least, he has not been an upholder of the theory. He certainly has never had the notion that he must use his power to compel his neighbors to accept his particular religious beliefs and conceptions of duty, as has been the

case in bygone times with many persons possessed of great power. And this fact is very weighty evidence for the view that the world is really much farther advanced now in civilization than it was even a few centuries ago. But what the world needs today is evidence that the great national rulers hold the theory antithetic to this and familiar to all Christians in the assertion that God's kingdom is spiritual. The Kaiser seems not to have grasped the deep truth contained in such formulations. And its incompatibility with the conception of the state prevailing in Germany appears to have been perceived by but few Germans. Occupied, as the Emperor's mind necessarily is, with coexisting splendor and weakness of the old German Empire of Barbarossa, it is not surprising that the words of Tacitus *Propter invidium* (through envy) as applied to the Germans, should fill him with dread of such a "cosmopolitanism" as characterized that big, unnatural aggregation. As opposed to this sort of thing the nationalism of modern Germany is magnificent in both theory and practice. But in so far as it permits the watchword, "Germany, Germany above everything," to be understood as meaning that German culture and German ideals must be made to dominate the world some day, even if war has to be one of the instruments employed for accomplishing the end, it is a sore misfortune not

only for the world at large, but for Germany.

Martin Luther, a great German like Wilhelm II, but because a peasant instead of a Hohenzollern, was able to see with considerable distinctness the tremendous truth that nothing which has been proved to be of supreme worth to mankind generally can be such to any individual man unless it be voluntarily accepted; that the most precious thing is robbed of its preciousness to anyone upon whom it is forced. "Do not," said Luther to his Wittenberg associates, overzealous in propagating his teachings, "make a 'must be' out of a 'may be.' '*Summa summarum*,' I will preach it, I will talk it, I will write about it, but I will not use force or compulsion with any one." Immortal words these!

About the noblest self-discipline a man can acquire comes from seeing more clearly than his neighbor what is good for the latter, and yet refraining from using force which is his to use, for imposing it upon that neighbor. There is a world of difference between a non-force doctrine of this sort, and the sort that would endure any indignity rather than repel it by force.

No faithful student of organic evolution can fail to think about the British Empire from this standpoint. Not, of course, to pronounce it doomed to go the way of all the others just because the others have gone; but to raise the

question whether in this case integrative forces sufficiently powerful are at work to comply with the biologic principle of integration. Although it is neither my province nor is this the place to attempt an answer, this one remark may be made: in so far as the Briton has discovered and has acted in accordance with the discovery that the integrative forces of civilization are inherent, resident, and essentially self-operative, and not to be imposed by external authority, he has gone farther toward conformity with biologic evolution generally than has been the case in any of the former attempts at unlimited empire. There are evidences not a few in recent years that the highly cultivated sections of the British Empire, even though widely detached geographically from other portions, are bound to the whole by internal adhesive forces and not by compulsion from the central authority; in other words, that they remain in the Empire, even though they might, if they so desired, become peacefully independent or attach themselves to some other country. This appears to be the case with Canada. In so far as such a situation is reached, there is conformity to the principle of integration in biologic evolution, and so far as this matter is concerned, the integrity of the Empire is assured during the prevalence of these conditions.

VII. SCIENCE AND HUMAN BROTHERHOOD

Our consideration of the magnitude of human nature has so far only touched the differentiative side of human evolution. Fidelity to our general idea requires us to touch it on the integrative side as well. Were the treatment on this side to be comprehensive, it would reach to the whole mass of facts on which the theory of the unity of the human race is based. It would begin with racial anatomy and physiology; and the close similarity of all the peoples — no matter how diverse in such particulars as color of skin and eyes and hair, shape of head, structure of hair, type of features — would be set forth in detail. The bones and muscles and blood, reproductive organs, and nervous system, would all be gone over part by part, to bring out the "practical identity," as the usual dissecting room language has it, of all these systems. So far as the ordinary medical student is concerned, it makes not the slightest difference whether the cadaver from which he studies anatomy is that of a white man, a black man, a red man, a brown man, or a yellow man.

But all this we pass by. It has been touched upon only as a reminder of what a vast and convincing body of physical evidence there is in the background that all men are very close of kin. Following close behind all this ana-

tomical-physiological evidence of unity, would come that from palæontology and archæology. But this we pass, also, mentioning it only in the interest of making the background of the discussion still more secure.

Our main interest is in the unity of man on the plane of his higher life. The treatment may take the form of a brief inquiry into the meaning of the phrase, "the brotherhood of man"; and its cognate one, "the golden rule." The conceptions expressed by these phrases have played a great rôle in the cultural advancement of man. Hitherto, the force they have had has been almost wholly in their appeal to the emotional, to the affective side of man's nature, and very little in their appeal to the rational side. They have had the sanction and the authority of religion, particularly of Christianity; and they have been the rallying-cry of many groups and classes of men banded together against a common enemy, or for the attainment of a common good. But they have had little or no positive, unqualified support from the side of reason and science. Indeed, too widely has it been assumed, both by men of science and men of religion and ethics, that these great conceptions are the exclusive province of religion. Such a view seems to be the chief ground on which Tolstoi, Brunetière, and other intense lovers of mankind have based their in-

dictment of modern science as having proved its inability to contribute anything essential to human welfare and happiness.

But from the standpoint of this discussion, one of science's supreme tasks is to test these conceptions by its familiar methods and in the light of its other findings. The province of human biology is to take the very widely observed phenomenon of fellow-feeling as it takes any other fact pertaining to man (his instinct of propagation, for example), and see what can be made of it — whether it is simple or complex, how it is related to other elements in his nature, how it has grown up, and so on. Such study discovers for one thing that fellow-feeling is the extreme term of the integrative series of human evolution. As such, it is of supreme biological interest. It is as interesting in the study of the species as is the nervous system and its functions in the study of the individual.

Numerous and great researches bearing directly and indirectly on the question have been prosecuted, especially during the last half century; and from such a monumental work as that of Westermarck on "The Origin and Development of Moral Ideas" we are able to get a rather clear picture of how the conception of brotherhood has gradually come forth from the long and extremely checkered course of human history. A chapter in that work entitled,

"The Origin and Development of the Altruistic Sentiment," is particularly useful to this end. From this presentation we may summarize the course of things as follows: At the foundation of social groups, the notion of physical kindred has always been present. This is based on the primal and universal fact of the parent-offspring relation. The notion is often held, though in reality it may be a mere fiction — sometimes religious, sometimes political, and sometimes a fiction of quite another character. "The doctrine of Nationalism," says Westermarck, "is the spectre of the same political principle — the principle of a common descent, either real or fictitious — on which states were founded and governed when civilization was in its cradle."

And here it may be remarked that Christians accustomed to regard the brotherhood of man as in some essential way involved with miraculous, supernatural occurrences, should think far more earnestly than they usually do of the effort made in the New Testament scripture to trace the physical genealogy of the founder of their religion. They ought not to pass over, as they are wont to do, that opening phrase of St. Matthew's Gospel, "The Book of the Generation (or birth) of Jesus Christ, the Son of David, the Son of Abraham." Apparently here, as everywhere on earth, man born of a

mother and father is at the deepest roots of fellow-feeling. The idea of supernatural intervention to make the begotten something other than what he would be by nature is unmistakably an after-thought, an on-grafting, usually by a priestly hand, but frequently and ominously by a military hand.

Almost as general as has been recognition of parenthood as the initial bond among men, has been that of the notion of blood-bond. The latter is broader in that kinship is assumed although immediate parent-child relationship does not exist, and the degree of its removal may be remote and dubious. The importance of this distinction should not be missed. It involves the fundamental, the vital truth that despite a considerable remoteness of individuals by actual birth, there is still that in their natures which makes it possible for them to bind themselves together into unities, often of great coherence. Thus the Roman *gens*, originally a group of blood-relatives inhabiting a common district, was already in early times recruited from people of alien extraction who were "assumed to be descended from a common ancestor." "Assumed," and not known, be it noted, "to be descended from a common ancestor." The point is that the adopted member of the social unit may obtain as firm a place within the unit as the born-in member. Indeed, it is contended by

Dr. Frazer that even among peoples as far down in the culture scale as the natives of Australia and northwestern America the totem bond may be stronger than the blood bond. Although Westermarck does not hold Frazer's instances to be conclusive evidence on the great force of the totem bond, it is certain that in effect the brother by adoption may be quite as real as the brother by birth. Time and time again do we see proof of this in modern civilized society when the adopted child is even of different nationality from the adopting family.

So the bond of human brotherhood, though based first and foremost and always in biologic heredity, still is so expansive as to go rapidly and widely beyond the limits of actual birth kindred into the expanse of man's affective nature, there to find new, more numerous, and still stronger elements of coherence. And so it is that even ethical and religious sanctions of brotherhood are found to be strictly phenomena of man's nature,— that is, natural phenomena.

But there is yet more of significance to be revealed by a rational inquiry into the conception of human brotherhood. Earlier we touched on the integrative power of natural science arising from the certainty and universality of the facts and laws of nature. We must now return to the subject, this time from the marvelously widespread capacity of the human

mind to react in the same way to these facts, and to reach the same interpretations of these laws. How many of us have reflected as carefully as we ought to on such a fact as that Japanese and Chinese men of science are describing natural objects and reasoning about them with quite as great a degree of correspondence as subsists between the descriptions by English and German scientists, or even between Englishmen among themselves, or Germans among themselves? In the light of our modern conceptions of physiologic-psychological processes, how can we avoid concluding that in spite of the numberless ages and generations that have elapsed since there was a common ancestor for Oriental and Occidental, and in spite of the fact that during all these ages and generations there had been no common effort in these fundamental matters, there still is a unity of brain structure, subtle beyond any hope of direct scientific observation and experimentation to prove? It seems as though we must recognize in facts like these that to the affectional elements in human brotherhood, mighty in power but often fitful in action, there is added a rational element which, though less applicable to the rank and file of men and less intense of action, is more solid and trustworthy and enduring.

We must not fail to notice that the affec-

tional elements themselves do not remain exactly what they were before they were re-inforced by the rational elements. Beyond question, the affection between men who have a common intellectual interest as well as a mere feeling of congeniality for each other, or even the deeper feeling that comes with membership in the same church or fraternal order, is somewhat different in kind from that which has no such interest. Nor is there any doubt that on the whole the bonds thus re-inforced and qualitatively altered are stronger and more enduring. In spite of the intense and wholly sincere professions of love among the members of religious organizations, quarrels within these are proverbially bitter. No one engaged in a learned pursuit would contend that the bond of common intellectual and scientific interest, even at its best, is ever unrupturable. It is, however, significant that the history of science and learning presents no such bloody internecine war as does the history of religion.

The trend of our inquiry may now be stated in a form that might appear dogmatic if illustrative material were not everywhere visible. On its integrative side, progress in human culture consists in preserving a balance between the affective and the rational elements of "the brotherhood of man," and also in such an interaction of these two groups of elements that

they actually modify each other qualitatively. *From the standpoint of biological evolution, progress in civilization may be characterized as the differentiation and intensification of love and intellect, and of the intellectualizing of love and the affectionizing of intellect.*

CHAPTER V

THE PSYCHOLOGICAL EFFECTS OF ADOPTING THE HYPOTHESES OF MAN'S CAPACITY FOR UNLIMITED PROGRESS, AND NATURE'S CAPACITY FOR HIS UNLIMITED SUSTENTATION

The last of the four topics now being discussed, the vastness of nature, is finally reached. It was touched before to the extent of recognizing the fact that nature is incalculably great in forms and forces, and that the course of scientific discovery does not warrant us in fixing any limit to its magnitude, but does warrant the "working hypothesis" which, fully apprehended, amounts to a mighty faith that there is practically no limit to nature's capacity for yielding to man all those things which, from sources outside himself, he truly needs.

We are to consider now the psychological effect, speaking in common parlance, of man's viewing nature thus. To be more exact, the question before us is, were such an hypothesis of human nature as that sketched above, and an-

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other of the unlimited capacity of nature for the support of man, to be actually adopted by the foremost nations as a working basis, what would be the effect on the attitude and conduct of men toward one another and toward nature? Manifestly this is too gigantic a problem to be fully treated here. But assuming that the solution would have an essential bearing on the central thesis of this essay,— namely, that if man would make the earth yield the most possible for his wants, he must find a more rational and effective way of distributing it than by means of war,— then that solution must be statable in rather brief and familiar language, or it can never become practically operative.

I. NEGATIVE: BANISHING DREAD OF "TRAGEDY OF POPULATION"

In the first place, these two hypotheses, accepted with genuine seriousness, would banish forever all those fears concerning nature which must be regarded as unreasoned or superstitious as contrasted with reasoned and legitimate fears. No one will have difficulty in bringing to mind plenty of illustrations of the difference between these two kinds of fear. The sailor's dread of the "evil eye" in a gale, and the passenger's dread of starting on a difficult voyage on Friday or on the thirteenth of the month, are familiar examples of superstitious fear; while the fear of icebergs when the ship is in an ice-

berg region, and of collision with another ship in a fog, are examples of legitimate or reasoned fears.

Further, there are two distinct kinds of superstitious fear. There is that which magnifies the destructive forces of nature by imputing to them positive malevolence to man, or by conceiving them to be hopelessly, because divinely, intractable to man. Then there is the kind which assumes a limitation, not warranted by the facts, to the providing power of nature. Our concern is with the latter; but we ought to notice that while the first kind is preëminently characteristic of peoples low in culture, the second is more characteristic of those advanced in culture. It is a concomitant of the attribute of foresight, of concern about the future, which is very little developed in primitive men.

Savages do not theorize about "over-crowding" at some future time; right on the spot they "check the increase of population," using Malthus's language, by killing off some of the infants and the aged and the incapacitated, if these are found burdensome. The doctrine of "tragedy of population" referred to on an earlier page contains an element of genuinely superstitious fear mingled with legitimate fear. It is worth while to ask in passing whether people of the old, densely populated portions of Asia and Europe have not had ground into them, perhaps quite unconsciously, a measure

of this dread that we of America and the newer, less congested parts of the earth cannot fully understand because we have not been subjected to the grinding process for so many generations. How far are the notes of disgust and despair that run so strongly through the literature and philosophy of Southern Asia due to it? How much of Europe's bellicose pessimism is chargeable to it?

To rid the human mind of superstitious fear, no matter of what sort, is universally recognized as one of the great desiderata of human culture; so even from this negative side, if such an hypothesis of nature is justifiable and really promises release from the shackles of superstition, no persuasive effort should be spared to secure its adoption. But the best reason for wishing that such an hypothesis might prevail is found in the influence it would almost certainly have on the positive side, the side of motive and stimulus to work.

II. POSITIVE: IMBUING PRODUCTIVE EFFORT WITH RELIGIOUS ZEAL

Let us go directly to the heart of the matter. Beyond a doubt, as I am persuaded, such hypotheses of nature and man would imbue with a genuinely religious zeal all leadership in the tasks of conserving, developing, distributing, and wisely using the resources of nature. This

is no time for metaphysical discussion, still less for theological discussion. But it is a supreme time for recognizing the mighty power of religion in the affairs of men.

The experiences and observations since the beginning of the war ought to convince those who have supposed religion to be a thing of the past for those who like themselves are leaders in culture, that in reality it is about the most alive and fundamental element in human nature today just as it always has been. They ought to see that for practical men the problem should be not that of getting a final definition of religion, but of how to use it for the world's highest good. Even philosophers ought to recognize by this time that study of the workings of religion and framing tentative definitions of it would be more profitable than speculating on its ultimate nature.

In conformity with this suggestion, I present a characterization of it that will serve in the present discussion. The religion of a man who has reached a high state of culture is the faith-reaction of his whole self to the whole universe outside of himself. Of General Joffre a recent writer (Ernest Dimnet, *Atlantic Monthly*, March, 1915) testifies: "He has given proof of unparalleled faith in what he regards as the truth; and that his moral energy is on a par with his military ability"; and further that his

"technical superiority" is associated with a "moral power without which mere generalship is little, and, in fact, hardly ever exists." This case illustrates my characterization all the better in that Joffre is said to be "at least indifferent to religion"— meaning, I take it, that he has no interest in the Catholic, or probably any other dogmatic, formulations and practices connected with religion.

For promoting the utilization of religious zeal to the ends here indicated, a few remarks are presented on the strong influences that have been at work in recent years to rob civilization of this zeal.

Modern speculative science, admittedly not free from the imperfections and liabilities to error common to all things human, has never gone more grievously and unfortunately wrong than in undertaking to deny the essentiality of religion. What though in the name of religion the foulest of practices have found sanction, the direst of superstitions have flourished, and the exercise of the mind in interpreting nature and man has been stunted and distorted almost beyond recognition! How can the truly scientific student of the human animal fail to see in these dreadful reckonings against religion, evidence not of its spuriousness or unessentiality or transitoriness, but of its liability to go wrong, to work tremendous harm as well as tre-

mendous good? For such a student cannot fail to see that most of the noblest accomplishments of man have been permeated with the spirit of religion, if not done in its express name. The greatest discoveries in physical science even, have been made by men of intense religious natures. The assumption widely held that because many of the supreme geniuses in physical discovery have been persecuted by the Church, therefore they themselves were hostile or indifferent to religion, is wholly unwarranted. In numerous cases, as those of Copernicus, Galileo, Kepler, Harvey, Newton, and Priestly, it is on record that their care about religion was very positive. For speculators on the phenomena of nature and human nature to argue that the facts presented by these men's lives proves only that they were subject to the errors and follies of their time, is but another manifestation of the common tendency of mortals to warp facts into conformity with theories. The attributes of imagination and religion are somehow so related to each other in men supremely endowed for the study of nature that they will not suffer themselves to be rent asunder. Instances of this in our own time are abundant. Louis Pasteur and Lord Kelvin are especially notable ones. Thomas Huxley's declaration, quoted by Leuba ("A Psychological Study of Religion," page 24), "Science prospers exactly in

proportion as it is religious," is fully justified by the history of scientific discovery.

Those scientific men whose religious endowments are so weak as to permit them to contend that religion is a "passing phase" in human culture, are at best men of secondary or tertiary achievement in discovery. I do not believe a candid consideration of historic and contemporary science can reach any other conclusion on this matter. If some of Charles Darwin's utterances on religion be instanced as refuting this view, it should be pointed out that the limit of his skepticism about religion, so far as concerned his personal experiences, seems to have been reached in his parenthetic remark, "I do not think the religious sentiment was ever strongly developed in me." When he says, "disbelief crept over me at a very slow rate, but was at last complete. The rate was so slow that I felt no distress," he is speaking about certain dogmas of the particular Church into which he was born and the priesthood which he thought of joining during his early life. I can find nothing in his writings that even hints at his having conceived the basal sentiments and emotions of religion to be something secondary and transient; and I would insist that no man holding such notions has ever lived so exalted a life as he did, and given to the world so noble a life's work as he gave.

Close of kin to the maladies brought upon man by speculations for and against the nature of religion, are others brought on by speculations about the Ultimate Good. No profoundly modern man will devote more of his strength than the impulsions to abstract thought and self-examination demand, in speculating on what The Good is. He is persuaded that if there be such a thing as Absolute Good, neither he nor anyone else knows what it is, so that it is too tenuous and far away to be of any purpose toward the solution of real problems. He is certain that food and clothes and houses and material wealth and bodily health and comfort, are not the whole good, but he is also certain they are part of it.

So we approach again, from a little different angle, the vital matter of attitude toward nature and toward work upon its problems. Whatever theory be held as to the nature of God, it is certain that the myriad ordinary things which contribute to human efficiency and happiness He never bestows upon us, even if He could, except by the medium of nature and our own brain work and hand work. None but an expert juggler with logic will contend that God is able to make a loaf of bread in any other way than through the instrumentality of flour and human hands; nor that He can produce

wheat by other means than those of soil, sunshine, and water.

The bestowals of the many essentials of life are upon the unjust as upon the just, upon the scoffer as well as upon the devout, so long as each works with equal skill and industry. How, consequently, can any person both honest and intelligent refuse to admit that nature is entitled to be a sharer in his deepest gratitude for his own creation and preservation? How can he conscientiously withhold from nature part of that sense of dependence which he so gladly acknowledges to be due to God? There is not the remotest chance for science and religion to do their best for man so long as science looks upon nature, and especially living nature, as "nothing but" matter and force; and religion looks upon the world as mere dirt out of which God can make something good if He chooses to. Every great forward step in civilization is testimony that part of the beneficence which surely pertains to this universe in some way is inherent in it and does not belong to God alone. The inculcation of Christian theology, from the early centuries of its history down to this hour, that all goodness is from God, while nature is at best only passively good and for the most part is evil and hostile to man, is not merely contrary to fact and logic; it is con-

trary to the every-day rules of fair play and honest dealing.

If nature is in the deepest sense provident, and if we are warranted in adopting the hypothesis that it is all-provident, why, I ask, should not the motherhood of nature appeal as strongly to our religious sentiments as the fatherhood of God? Modern inquiry into the psychology of religion is surely revealing that the religious attitude is not determined wholly by the external objects of devotion. It is partly internal, is in the constitution of man himself. There is no evidence that men ever worshipped a God whom they conceived entirely hostile to themselves, and there is no likelihood they ever will. No matter how much or how little they know about the general nature of that which they worship, of one thing they must be assured, and that is that personal benefit of some sort will accrue to them. Complete abnegation of self-interest would be complete abnegation of self-life.

III. RELIGIOUS ZEAL IN SUBJUGATING NATURE RATHER THAN IN SUBJUGATING MEN AND NATIONS

Incidentally, though very importantly, to secure for labor upon nature the benefit of religious zeal would involve its transference from

the pursuits of war to those of peace. It appears that nearly all great warriors have recognized the mighty force of religion, and have used it to the full for the accomplishment of their tasks. The gain would surely be great, could the gods of agriculture and navigation and mining and manufacture, to say nothing of those of poetry and drama and painting, receive the energy that has hitherto gone to the gods of empire and war. Why should there be less glory in the sacrifice of the lives of seamen who sail merchant ships than of those who "man" battleships; or of miners of coal and gold than of diggers of battle trenches? Why should men be less ready to yield up some of their power or wealth for the general good than to yield their lives in battle to the same end? Why should deeds of the former sort win less applause than those of the latter? Why should nations sacrifice innumerable lives and cause untold suffering in war, holding such deeds to be the zenith of national honor, but view the sacrifice of a foot of territory as the nadir of dishonor? To do this is to apotheosize sentimental honor at the expense of rational honor, and then suffer practical defeat at the hands of the false god. Surely the heights of civilization toward which all the great nations look with longing gaze, have never yet been scaled by any of them.

CHAPTER VI

WHAT OUR NATION MIGHT DO IN THE PRESENT CRITICAL PERIOD

It remains to ask what our nation might do at this time to forward this great end. Manifestly we cannot escape playing some part in the grim world-drama now being staged. The answer may be short and sharp. Two sorts of things may be done; indeed, must be done, if the part we play is to be positive and honorable. One sort will pertain to the nation itself; the other to its relations with other nations.

I. MEASURES OF INTRA-NATIONAL IMPROVEMENT

We shall forthwith subject ourselves to a self-examination the like of which we have hitherto known little about, and shall thereby reach an understanding, a consciousness such as we have never before had, that this nation of ours is something more real, something larger, something grander, something holier than its government and its business interests. Hitherto, whatever else there has been — and surely there has been much — has been *in* rather than *of* the

nation. At no time in our history,— except for a period before and during the war which removed from us the slave-holder's shackles and established beyond cavil the nation's physico-political integrity,— has the flag meant much for the higher life of the whole people. It has not stood greatly for the evolution of the *human* animal, for human cultivation, for civilization, as science must understand these terms. With regard to culture, the highest symbolism claimed for the stars and stripes by most political leaders has been that of opportunity. For culture *itself* (not Kultur; may the distinction be ever clear before us!) it has signified little.

Latterly it has gained rapidly in meaning for general physical well-being, for political uprightness, for legal, industrial, and social justice; but only permissively for the still higher good of the people, their spiritual development. The nation as a nation has thus far chosen to restrict its fostering efforts to those in behalf of the grosser needs; the need for food, clothes, houses, bodily health, and material wealth; and to leave the rest to private beneficence and enterprise. As might have been foreseen, the experiment has not succeeded in a measure that ought to satisfy patriotic citizens. Poetry, drama, and music, painting and sculpture, on the whole the purest, highest manifestations of man's culture, have not been thoroughly incor-

porated into our national life. They have not been integrated, in an evolutional sense, with the industrial, political, and economic life. And it must be predicted that they never will be until government helps them no less positively than it now helps industry and commerce.

This national insight once gained, a number of somewhat radical departures in governmental undertakings for the general welfare would quite surely be set on foot. Three of these will be mentioned.

The humiliating little national bureau of education will be humanely killed and decently buried, and a department created with a cabinet officer whose rank should be inferior to none except the Secretary of State. No citizen of our country who is both patriotic and wise can avoid deep solicitude at the wide-reaching influence that privately endowed and managed undertakings are today exercising over the education of the nation's young people. Nor need this solicitude imply a shadow of suspicion as to the motives with which the great money gifts are made, or the persons chosen to execute the trusts. The sum and substance of the objection is that in the very nature of the case it is impossible for the nation to have done what it needs to have done *in the way it should be done*, without doing it itself. True national culture is self-culture, just as true individual culture is

self-culture. It can no more be given or bought in the one case than in the other.

Another thing that will have to be brought more definitely into the national service and under the national support and guidance, is art, especially dramatic art. A national theatre on Capitol Hill in Washington, architecturally worthy to associate with the capitol building and the Library of Congress; and governmental encouragement to good play-writing and good acting, should do much in this direction. Objection to this on the score of cost may be met by the same arguments with which objections to expenditures for forestry, the reclamation service, and numerous other governmental undertakings are met. If successful, it would pay in the long run. Who questions that to improve the public taste for plays and acting is to make more demand for these and to increase theatre-going? Those economists and politicians who, on either theoretical or practical grounds, hold to the so-called economic interpretation of society, are very poor business men. To be consistent they have to draw a sharp line between what they call the necessities and the luxuries of life, and contend that the former are the things which merit first and chief attention; that food and clothing stuffs, building material, and so forth, being the backbone of man's existence, are the commodities chiefly implicated

in the law of supply and demand. They perforce have only a subsidiary interest in the really human side of human beings, and so ignore for the most part the indubitable fact that all people have far greater needs and far greater consuming capacity on their spiritual than on their physical sides. According to the governmental ideas that have prevailed with us, the business politicians and the writers on economics most in vogue, have hardly been able to think of musical instruments, theatre tickets, paintings, works of general literature, and fine scientific instruments, as serious elements in business. No one who has taken the pains to gain real insight into human nature and who is measurably familiar with business methods in our country, can fail to see that there are great areas of human need "unexploited," to use a favorite expression, because their existence does not come within the limits of business men's theories and education.

The third "internal improvement" which, according to my view, the nation will have to undertake is the founding of a national university dedicated first and foremost to research in pure — that is, unindustrialized,— knowledge. Being a man of science and holding a university post, and, as might be expected, specially interested in this subject, I restrain my impulse to write at length upon it. I shall concentrate my

remarks into a single sentence: I do not believe the vast affairs of the nation which the government is now trying to take care of through its many departments and bureaus of applied science, will ever be cared for with the highest attainable success until the government itself furnishes the best facilities that can be furnished for training investigators. Rightly conceived and carried out, the national university would not weaken, it would strengthen existing institutions of like character.

II. MEASURES OF INTERNATIONAL IMPROVEMENT

The supreme international step our government could take would be to express to the nations of the world its readiness to join with others in a great extension of our already well-advanced "open door" policy; the proposed extension being nothing less than that of peacefully transferring its sovereignty over portions of its territory to other nations under certain conditions. The hitherto unthinkableness of such a thing appears to be due in considerable part to the notions that the ownership of land by a government has a peculiar sacredness and inalienability that does not pertain to ownership by an individual; and that self-interest and altruism are wholly different categories when applied to nations from what they are for

individuals. Anyone who has grasped firmly the principles of organic individuation and integration, of independence and dependence, must see that self-interest and interest-in-another have essential elements in common, whether applied to individuals or to any other organic entities. What we call egoism is organically tinctured with what we call altruism, and altruism is similarly tinctured with egoism, and it matters not whether the related individuals be individual human beings or individual nations.

Consider a hypothetical case, which might become an actual one were the principles here enunciated acted upon. The relationship of the United States to Japan is on the whole more problematical than that with any other overseas power, its present delicate situation relative to some of the European countries being exceptional and presumably transitory. In matters of trade and of social, intellectual, artistic, and, it may be said, religious comity, we are getting on well with Japan. The two peoples are understanding each other better and better, and are profiting more and more by their neighborliness. But on the horizon appear the dread figures of the labor and race problems; the first growing primarily out of Japan's congested population; the second, out of the fact that the two peoples are of different ethnic

stocks. What is to be done about it? The key to the situation is clear enough. The Japanese government does not own as much land as its people need, while the government of the United States owns more than its people need, or at least more than they are able at the present time to use to the best advantage. The whole Pacific slope of the United States and the Hawaiian Islands are pushing hard for more general utilization of their farm lands. The problems of land and of laborers are central in whatever of menace the situation contains. The question of race is surely subordinate, though susceptible of being played upon with great effect, as we all know and have plenty of opportunity to regret. Why should not the two nations approach the problem in the same spirit and with the same rational regard for facts that would obtain between two high-minded business men, should a parallel problem come up between them? Japan needs more territory; we could spare some.

Since Japan and the United States have already sought through diplomacy to adjust the labor question, what could be more rational than to seek a course whereby Japanese laborers might choose to go elsewhere than to the Pacific States, rather than to compel them to stay away? Is there anything Japan could give us in exchange for a piece of our holdings,

— the Hawaiian Islands, for example? * The specific character of the transaction would be determined by the negotiations. It might be an out-and-out money "deal," so far as the territory is concerned, as was the acquisition of Alaska by the United States. But the fact that the Islands are occupied by a civilized population and much of the soil is under good cultivation, puts them in a different case from what Alaska was in at the time of its purchase.

* The reasoning could be modified so as to apply as well to the Philippine Islands or part of them, or to Alaska or a part of it. The principle is the thing. *If the United States becomes rational and far-sighted in her self-interest she will see it would be wiser to help Japan to what she must have than to try to prevent her from getting it.*

While reading the proof of this essay I became acquainted with the proposal of Congressman Frank O. Smith, as embodied in a joint resolution presented by him in the National House of Representatives on October 14, 1914, to transfer the so-called Panhandle of Southeastern Alaska to Canada. Obviously the main thesis of my essay is in essential accord with Mr. Smith's commendable plan as thus stated. But his two contentions in support of the resolution, that this transfer would be a national act in accordance with the Golden Rule; and that it should be made as a step toward uniting the white race against Asiatics, are, according to my judgment, incompatible with each other. Has Mr. Smith forgotten that the "white race" got its Golden Rule from Asiatics? And does he not know that during all the centuries since the rule was enunciated, it has come at least as near realization in Asia as it has in Europe and America? The golden quality of the rule would be lost by such restriction.

As a matter of fact, Alaska did have a population which, though small and but slightly advanced in culture, was sufficient to have raised many of the questions that naturally inhere in any transfer of national title to territory. Beyond a doubt the human elements in all business ought to be recognized as paramount. The physical elements, money or land or trade, are subordinate, no matter what their magnitude. A sum of money and a quit-claim deed are never the whole, are not even the chief parts of a business transaction. What could give the highest worth to negotiations toward this particular transaction, would be an effort on the part of these two nations to bring about an international agreement whereby the fortification and military defence of the Hawaiian and all other Pacific Ocean ports should finally be done away with. Such an effort would naturally involve all the great powers which have interest in the Pacific, and even though unsuccessful, should be of lasting good, for it would be an intergovernmental recognition of the possibility of treating rationally one of the hardest problems that confronts civilization. And were the effort to succeed, the gain to us in immunity from expenditures for armament on our Pacific frontiers would repay any money loss.

But what of our fellow-citizens whose homes and business interests are in the Islands? Does

not the suggestion to thus dispose of the territory involve the reprehensible idea of handing over a portion of our population to a foreign country? With many of the Americans resident in the Islands, pure patriotism and devotion to American institutions would probably stand seriously in the way of willingness to live under a foreign government. Difficulties would undoubtedly be found in this. But it seems as though there is a starting point for the adjustment. The situation in the Archipelago is perplexing any way. The problem of a supply of labor for the plantations is perennial, often acute. There is no prospect of its being solved by migration thither of American workmen. The number of Americans is so small in proportion to the Orientals, the Japanese largely predominating, as to deprive the general population of anything like an American character. As a consequence there can be little of that sense of solidarity and security which can accrue only to a community of considerable homogeneity of race, language, and social customs.

Individual and property rights of American citizens would have to be secured by treaty to such Americans as should wish to continue their Island residence; and it seems as though their business would be better off under a strictly Japanese régime than under present conditions. A large increase of the Japanese population

would undoubtedly take place and this would result in a more thorough development of the Islands' resources than can be expected with things as they are.

This piece of territory, even though small, added to what Japan already has in Formosa, and taken with her privileges in Korea and Manchuria, ought to relieve greatly the congestion of population which she is now enduring.

Again, opportunity would be afforded by the transaction to settle by treaty the still broader question of the rights and privileges of citizens of each country to migrate to the other and hold property there. And finally, the chance would be afforded for two peoples of different race and culture to take up together more definitely and directly, more officially, if one chooses so to state it, the problem of how such peoples are to make their inevitable contact with each other serve the good of both and the still larger ends of world civilization.

It remains to say a little about the part the American citizens resident in the Islands would take in the transaction. So far the only part assigned them has been for them to see that their conditions would not be made seriously worse, and might possibly be bettered by the change, and then to submit to the inevitable with as good grace as possible. But such a

passive or semi-passive rôle would be quite incompatible with the dominant ideas of this discussion. The formal consent of a majority of these citizens would be an essential condition to the transaction. Something of the disadvantages and advantages to them that might be expected have been indicated. Could they be so impressed with the possibilities for good to the two races and nations at large and to the general cause of civilization as to induce them to favor the scheme? That is one of the crucial questions.

For more than a century we people of North America have repeated with enthusiasm and pride Bishop Berkeley's line, "Westward the course of empire takes its way." Deeper should be our enthusiasm and more justifiable our pride, had we the right to supplement that line by another, "Westward the course of civilization takes its way." Such a right, I believe, we should be acknowledged by the world to have won, could we consummate some such arrangement as that outlined.

Two and a quarter centuries ago the gentle soul of William Penn conceived for this western continent a Philadelphia, a City of Brotherly Love. The mighty experiences civilized man has gone through since that time have shown that what he must have to realize Berkeley's vision, "time's noblest offspring," is less a City

of Brotherly Love than a Land of Brotherly Wisdom, a Sophodelphia rather than a Philadelphia. The world's prayer at this time should be for an understanding of head and heart. Therethrough alone runs the road to any sort of human brotherhood and love for which strong, active men can care.

Would the American citizens of Hawaii be willing to put their beautiful island home to such a world service? I believe a majority of them would, once they were assured it would not entail considerable material loss upon them, but might bring gain; and were made to see that it would usher in a new era in world politics and world civilization; an era in which nations would find it to their own advantage to help one another when help is really needed, rather than to injure one another.

The possibility of conditions in which the policy of England would be to help Russia to better seaports, if Russia truly needs them; of France to help Germany to more and better room in Africa for colonization, if Germany's needs in that direction are clear; and of Germany to help Japan, the United States, and Great Britain to free the whole Pacific from need for extensive armaments, might be counted on to fill millions of persons the world over, among whom would be the Hawaiian Americans, with an enthusiasm that would be irresistible

and permanent because sustained by reason as well as by emotion.

This is idealism, but it is scientific idealism.